NOLOGY DEPT

THE PAPER INDUSTRY and PAPER WORLD

AN EDUCATIONAL NEWS MAGAZINE—NOVEMBER, 1945

PRE-WAR INSTALLATION
IN OPERATION
NOTE—NO POND

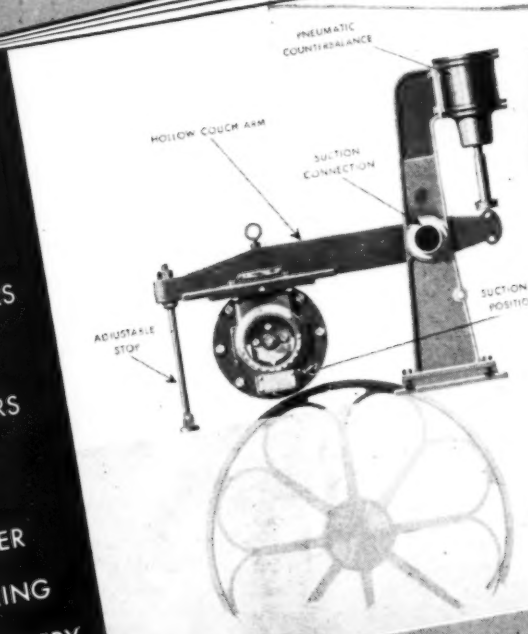
D

DESIGNERS
AND
BUILDERS

PAPER
MAKING
MACHINERY

SINCE
1880

CATALOG NO. 1045



Downingtown
Suction Cylinder Couch

DOWNINGTOWN MANUFACTURING COMPANY
DOWNINGTOWN, PA.

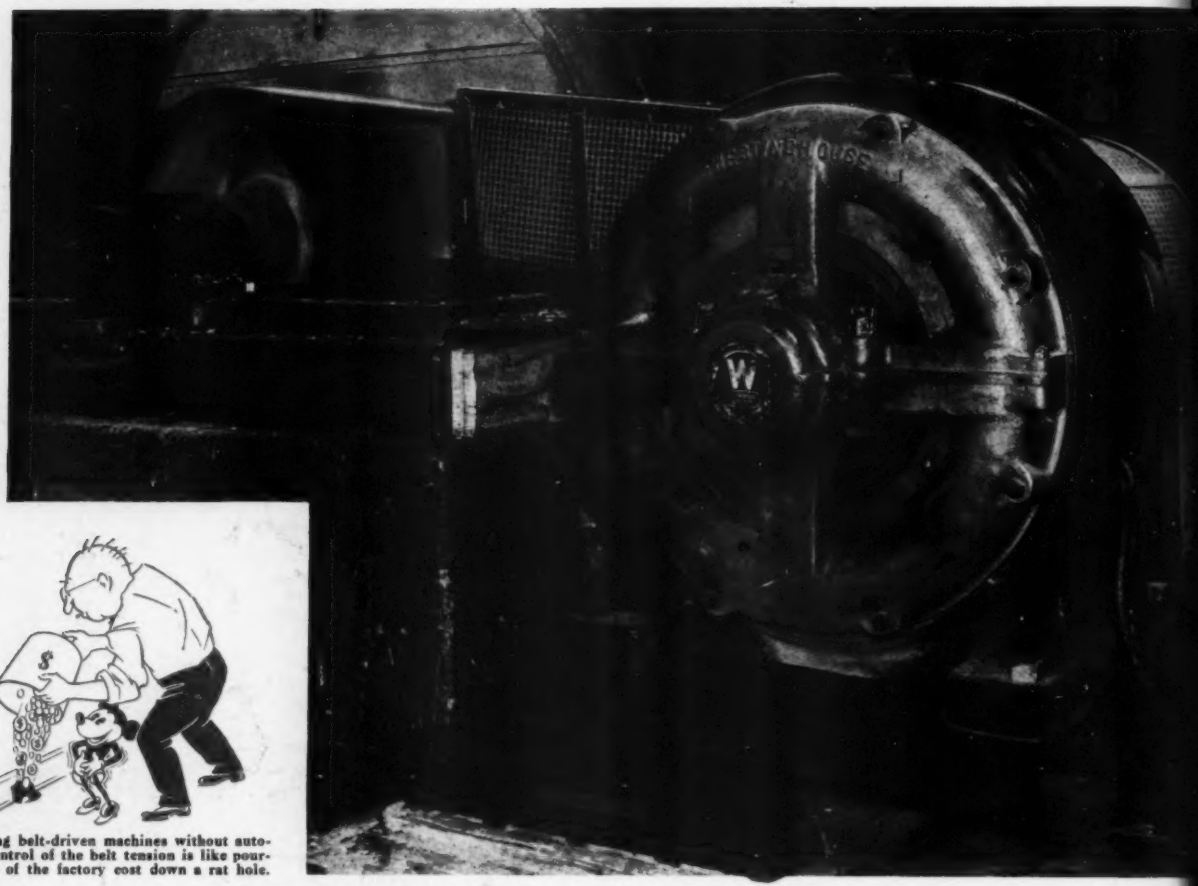
A PROVED ROLL
OF IMPROVED DESIGN

Many mill men haven't even heard about the Downingtown Suction Cylinder Couch, because only a few were installed, shortly before the war. But you'll soon hear more because we have quite a number on order. They remove more water by vacuum than a rubber couch does by pressure against the cylinder mould. We believe they are destined to become a standard part of single and multi-cylinder machines. Send for our new Catalog No. 1045.

DOWNINGTOWN MFG. CO.
DOWNINGTOWN, PA.

DOWNINGTOWN
Designers & Builders
Paper Making Machinery

RUNS MACHINES AT UNIFORM and MAXIMUM SPEEDS regardless of load change



Operating belt-driven machines without automatic control of the belt tension is like pouring part of the factory cost down a rat hole.

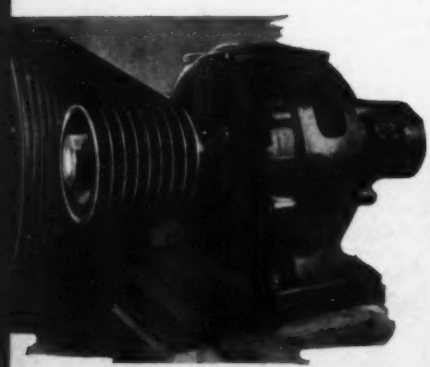
This 150 h.p. motor is driving an 88-inch chipper in a big West Virginia mill. The drive keeps the machine up to speed through all load changes and in spite of any belt stretch. The chipper does more work and better work. Power is put to more effective use as belt slip is practically eliminated and the drive is more efficient. Belts and bearings wear longer—maintenance is sharply reduced—the chipper operates better continuously and becomes more dependable.

The same results can be secured by installing automatic belt tightening Rockwood motor bases under the motors driving any other paper mill machinery. The installations are made over night and are not difficult for your own crew to handle. The results are immediate—and the improvement in driven machine performance conspicuous.

You can install these motor bases with either new or existing motor belt drives, using the same belts you are now using, if you want to. The results are the same with either flat belts or multiple V-belts.

Operating short center belt drives without automatic control of the belt tension by means of the Rockwood motor base is like pouring money down a rat hole as part of your factory cost is being wasted and part of your machine capacity not attainable.

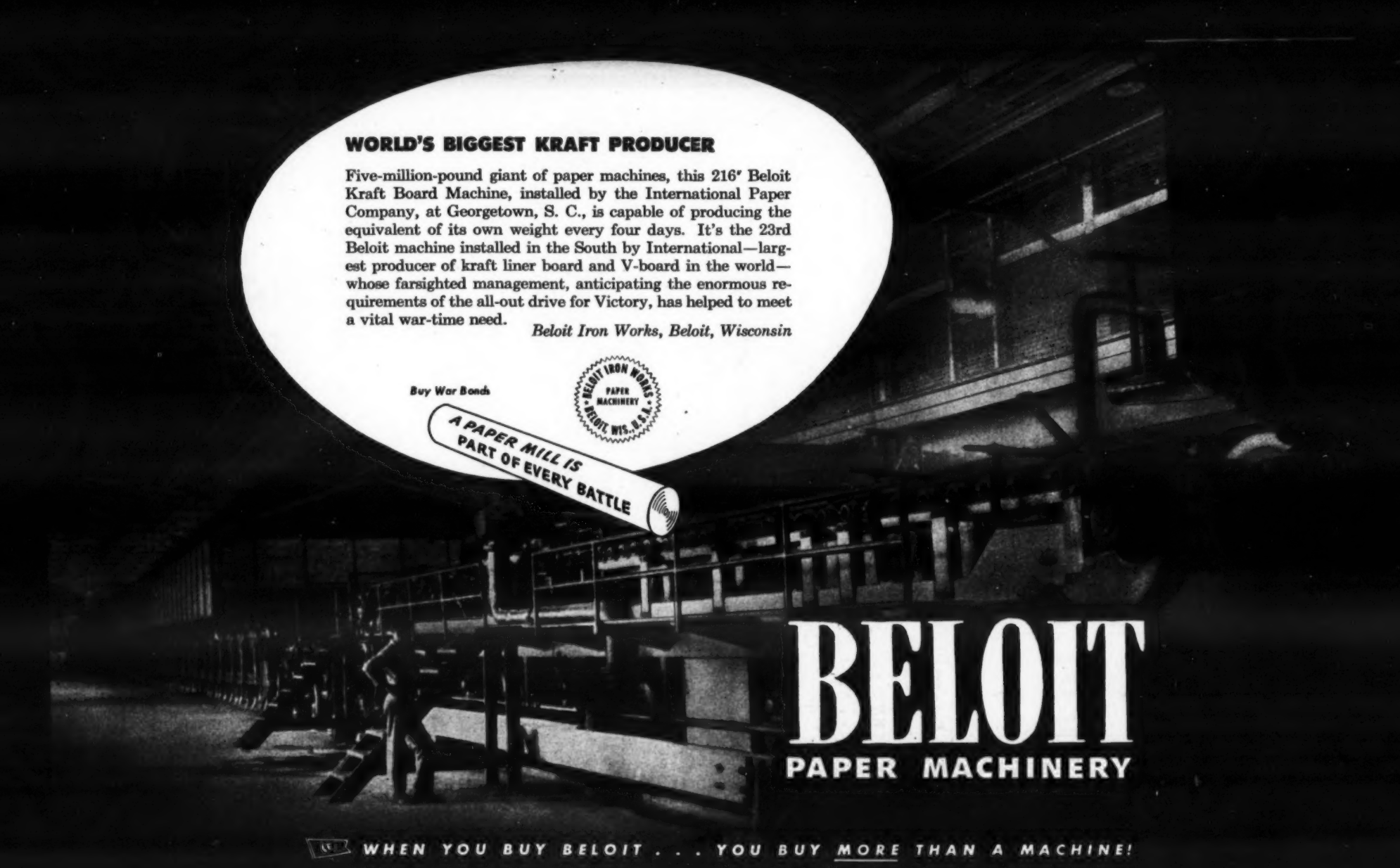
Rockwood automatic belt tightening motor bases are used in place of motor slide rails and their additional cost is but nominal as they pay for themselves in their first year of use.



Multiple V-belts stretch under load much as do flat belts and need automatic tension control as much.

ROCKWOOD

INDIANAPOLIS, INDIANA


WORLD'S BIGGEST KRAFT PRODUCER
Five-million-pound giant of paper machines, this 216′ Beloit Kraft Board Machine, installed by the International Paper Company, at Georgetown, S. C., is capable of producing the equivalent of its own weight every four days. It's the 23rd Beloit machine installed in the South by International—largest producer of kraft liner board and V-board in the world—whose farsighted management, anticipating the enormous requirements of the all-out drive for Victory, has helped to meet a vital war-time need.
Beloit Iron Works, Beloit, Wisconsin
Buy War Bonds
BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS., U.S.A.
A PAPER MILL IS PART OF EVERY BATTLE
BELOIT
PAPER MACHINERY
WHEN YOU BUY BELOIT . . . YOU BUY MORE THAN A MACHINE!

FOR SALE

SURPLUS MATERIALS

STEEL — Plates—Bars—Structurals and Shapes.

PLUMBING FITTINGS — Valves, Bronze—Brass—Cast Iron (Globe—Angle); Tees; Return Bends; Elbows; Unions; Plugs; Laterals; Crosses; Flanges; Couplings; Pipe Caps; Nipples; Dresser Couplings; Pipe Hangers. This material is in Black and Galvanized. Pipe;—Black—Galvanized—Copper—Brass.

BOLTS — Stud—Carriage—Regular.

SCREWS — Nuts and Washers.

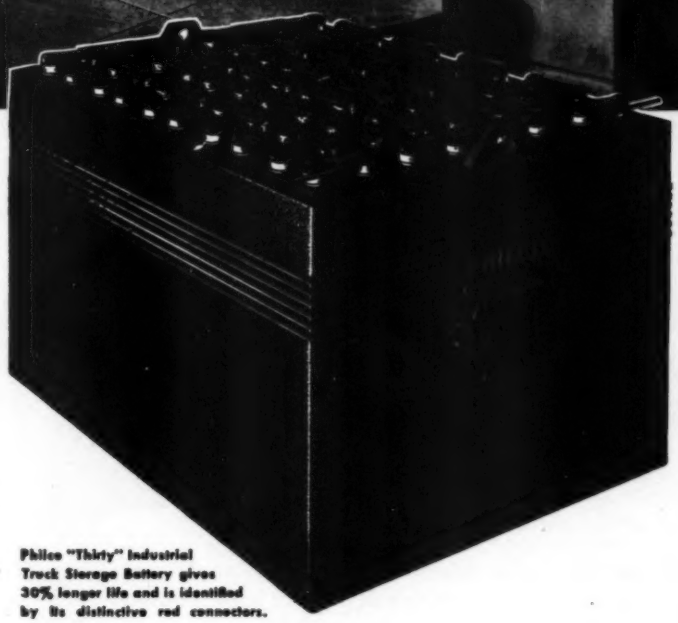
Above material open for inspection at our yard, subject to prior sale.

Detail list furnished upon request.

KEWAUNEE

SHIPBUILDING & ENGINEERING CORPORATION

KEWAUNEE, WISCONSIN



Philco "Thirty" Industrial Truck Storage Battery gives 30% longer life and is identified by its distinctive red connectors.

FOR 50 YEARS A LEADER IN INDUSTRIAL STORAGE BATTERY DEVELOPMENT

Tune in The Radio Hall of Fame, with Paul Whiteman and His Orchestra, Sundays, 6 P. M., EST; The Breakfast Club with Don McNeill, 9:45 A. M., EST, Monday through Friday—ABC (Blue) Network (Coast to Coast).

MODERN ELECTRIC INDUSTRIAL TRUCKS POWERED BY COST-SAVING PHILCO "THIRTY" STORAGE BATTERIES

Now you can get the kind of industrial trucks war experience proved the safest, most flexible and maintenance-free — ELECTRIC TRUCKS! And you can power your trucks with the greatest materials handling development since the fork-lift truck, itself—PHILCO "THIRTY", the Storage Battery with 30% longer life! Plan now for the big demands peace-time production will place on your materials handling equipment. Philco "Thirty" will give your trucks top capacity, *plus* savings in maintenance, depreciation and replacements. Write today for new catalogs giving specifications.

PHILCO CORPORATION • STORAGE BATTERY DIVISION • TRENTON 7, NEW JERSEY

PHILCO *Famous for Quality the World Over*

MATHIESON'S Sodium Chlorite—the amazingly efficient and versatile oxidizing agent which Mathieson's research organization has developed for use in so many industries—is now available in greater quantities since the lifting of war restrictions.

This is of particularly timely significance to the paper industry . . . the industry in which Sodium Chlorite was first extensively tested and proved. For now that bleaching is re-assuming its normal importance in every phase of the paper industry, producers can again enjoy the many advantages available through C2 bleaching techniques.

Really *white* white as well as lovely, eye-catching, sales producing colors in paper stem from the bleaching operation. C2 makes possible such whites and hues with new concepts of control and absolute minimum loss of strength factors.

From Kraft all the way to rag pulp and domestic flax, bleaching with C2 is the key to whiter, better, stronger paper products. Write Mathieson for information geared to your specific problems. *The Mathieson Alkali Works (Inc.), 60 East 42nd Street, New York 17, N. Y.*

Mathieson
CHEMICALS

Sodium Chlorite . . . Chlorine Dioxide . . . HTH Products . . . Liquid Chlorine . . . Sodium Methylate . . . Caustic Soda . . . Soda Ash . . . Bicarbonate of Soda . . . Fused Alkali Products . . . Ammonia, Anhydrous & Aqua . . . Synthetic Salt Cake . . . Dry Ice . . . Carbonic Gas

THE PAPER INDUSTRY and PAPER WORLD

(Reg. U.S. Pat. Off.)

VOLUME 27 - - - - - - NOVEMBER, 1945 - - - - - - - NUMBER 8

—FEATURES—

Pulpwood Production Tools ..... M. H. Collet 1203
Some Observations on the French and German Paper Industry ..... Otto Kress 1207
Reconditioning Paper Mill Felts ..... Dr. R. W. Mitchell 1210
Kimberly-Clark's Program for Re-employing Returning Veterans ..... M. J. Schulenberg 1213
The Foreman's Part in Veteran Rehiring ..... Lawrence Stessen 1217
Every Supervisor a Cost Manager ..... Henry V. Oberg 1218
The Forest Products Laboratory Reviews Its Wartime Accomplishments and Previews Its Future 1250
The Effective Evaluation of Paper Surfaces for Printability ..... V. V. Vallandigham 1258
Convention Papers . . . Abridged 1264

—NEWS—

"The Moving Finger Writes" 1170
Trade Winds 1171
Allied 1220
Associations 1228
Safety 1232
Names in the News 1234
Personals 1234
Necrology 1244

—DEPARTMENTS—

Editorials 1191
Current Thought 1192
Paper Sketches 1219
Safety Scores 1232
Coming Events .....
Practical Shorts 1247
New Equipment and Supplies 1272
Technical Developments .....
Papermaking Patents .....
New Publications 1276
Current Market Quotations .....
Index to Advertisers 1281

***Published monthly by* FRITZ PUBLICATIONS, INC., 59 E. Van Buren St., Chicago 5, Ill.**

EDWARD B. FRITZ, Founder
A. SCOTT DOWD, President and Gen. Mgr.
HARRY E. WESTON, Editorial Director
A. C. BRUCE, Secretary
EDGAR C. FARREN, Production Manager
BESSE MERRITHEW, Editor
A. C. L. FRITZ, Vice Pres. and Treas.
G. E. VON ROSEN, Circulation Director
C. J. ELWELL, Circulation Field Rep.

ADVERTISING REPRESENTATIVES

New York • RAYMOND S. VAN NYDECK • 9 Rockefeller Plaza • Circle 7-3085 • New York 20, N. Y.
Boston • MEADE AND COMPANY • 403 Statler Building • Liberty 9677 • Boston 16, Mass.
Cleveland • L. M. PERKINS • 3277 DeSota Ave. • Yellowstone 6504 • Cleveland Heights 18, Ohio
Chicago • JOHN D. HENDERSON • 59 E. Van Buren Street • Wabash 3543 • Chicago 5, Illinois
San Francisco • NOURSE ASSOCIATES • 582 Market Street • Exbrook 6685 • San Francisco 4, Calif.
Los Angeles • NOURSE ASSOCIATES • 412 West 6th Street • Vandike 5875 • Los Angeles 14, Calif.

THE PAPER INDUSTRY and PAPER WORLD is indexed regularly in "The Industrial Arts Index." An index to each volume is issued annually by the publisher as Section Two of the April number.

Copyright 1945 by Fritz Publications, Inc.

Member:
Audit Bureau of Circulation
Associated Business Papers, Inc.

Entered as second class matter June 29, 1938, at the post office at Chicago, Ill., under the Act of March 3, 1879. Subscriptions in the United States, U. S. Possessions, Canada, Cuba and Mexico, $2.00 for one year, $3.00 for two years. All other countries $3.00 for one year, $5.00 for two years.

Industrial LOGISTICS*

reduces cost of handling Pulp through warehouse — pays for Trucks quickly

"There's too much lag in handling our bales of wood pulp," said a big warehouseman during a search for improved methods of getting loads into and out of storage. "We must move them faster—and at less cost, of course. *Can you help?*"

That meant not only handling loads without pallets, but handling them without damage to the individual bales. An Elwell-Parker Truck was purchased, and the District E-P Materials-Handling Consultant began a series of modifications and tests of the supporting blades to suit this particular application.

* The science of assembling and handling all Pulp and Paper Plant loads to insure maximum economies at every stage of (a) Procurement, (b) Production and (c) Distribution, using Elwell-Parker Electric Trucks, Tractors and Cranes;

Employing the correct containers in Master Unit Loads, on Pallets or Skids;

To insure Greater Speed — Faster Production — Greater Turnover — Increased Safety—New Profits.

The result was a blade that could be driven under the 2,000-pound stack of bales without injuring them or disturbing the pile, either when stacking or removing from storage. Further modifications of the blades followed later, as the lading changed in character.

New earnings. The first Elwell-Parker Truck was so satisfactory that the owners soon ordered a fleet of them. Savings really skyrocketed then—they quickly paid for the Trucks during the first year, with further increases as other uses were developed for the equipment.

This is but one illustration of Elwell-Parker's willingness and capacity to aid Executives in creating great new savings in the handling of Pulp and Paper loads—sometimes without precedent.

Many unique Truck and Crane attachments now in general use, such as the Roll-Handler which has revolutionized the production of newsprint, were originated by Elwell-Parker Materials-Handling Consultants in co-operation with the home office Engineering Staff.

Elwell-Parker invites you to search *your* Load-Transportation Cycle for sources of important new savings and profits through applied Industrial Logistics — to call on the E-P Paper-Handling Consultant for co-operation in finding them.

The Elwell-Parker Electric Company, 4241 St. Clair Ave., Cleveland 14, Ohio,

Dial The Materials-Handling Consultant Today!

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

Dodge-Timken Pillow Block Beats Tough Couch Roll Conditions in Paper Machine

Dodge-Timken Special Duty Pillow Block in operation on couch roll of paper machine.

In 1940 the management of a large eastern paper mill decided to try anti-friction bearings.

For the first application they selected the couch roll of a paper machine—a tough job, where heavy loads, continuous operation and wet conditions exist.

The Dodge-Timken Special Duty Pillow Block was chosen for this application because of the load capacity of Timken Tapered Roller Bearings—radial loads, thrust loads and both together in any combination; the effectiveness of the bearing closures; and the general ruggedness of the pillow block unit.

This installation has been operating on a 24 hour schedule and has required no attention except the usual lubrication—a typical Timken Bearing performance.

Make sure the trade-mark "TIMKEN" appears on every bearing that goes in your equipment. The Timken Roller Bearing Company, Canton 6, Ohio.

ALERT TO TOMORROW'S NEEDS

PERKINS

CALENDER ROLLS

No calender can be run better than its rolls run it

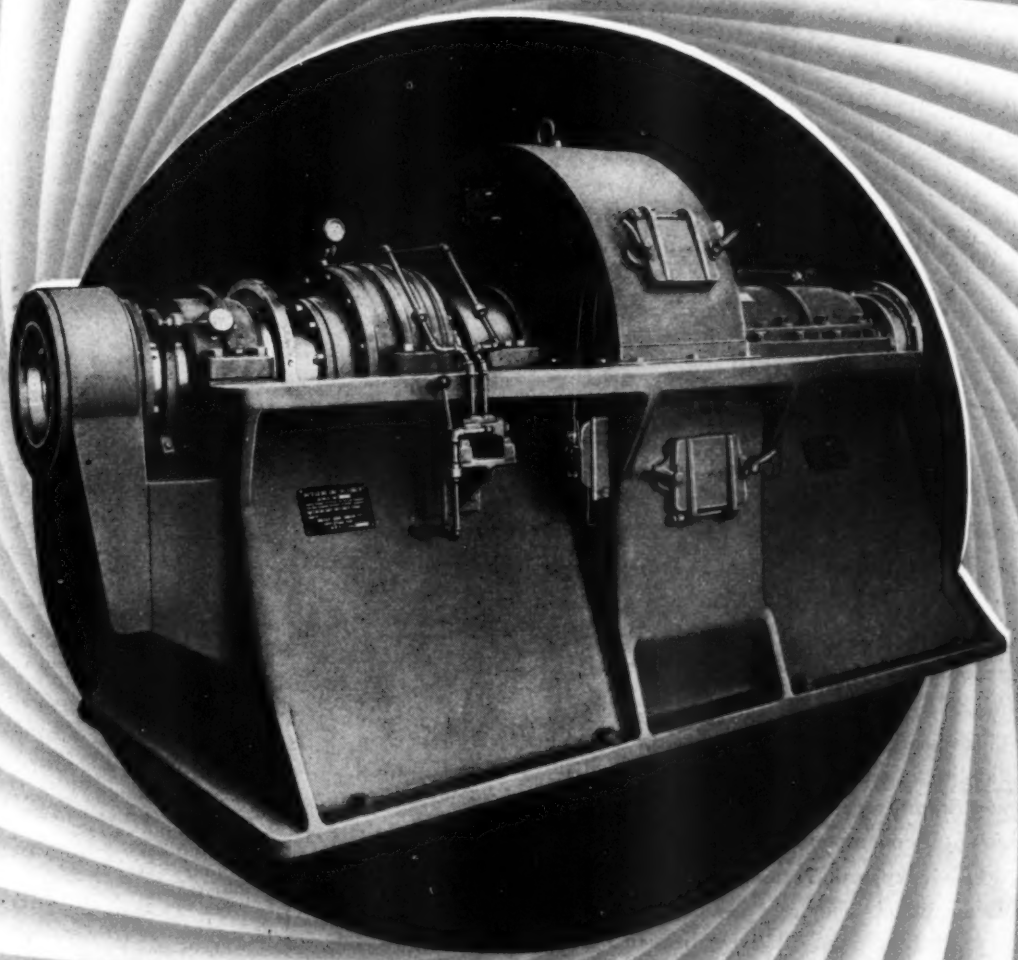
B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U.S.A.

THE LARGEST MANUFACTURERS OF ROLLS IN THE WORLD

Continuous

BEATING AND REFINING



FOR EVERY PAPER MAKING FIBER, BY

Sutherland

SUTHERLAND REFINER CORPORATION · · · TRENTON, N. J.
SUTHERLAND REFINER LIMITED · · · · · MONTREAL, QUE.

LASTING CORROSION RESISTANCE for Kraft FOURDRINIER WET ENDS!

Wet end of PUSEY & JONES *234-inch news Fourdrinier built for Southland Paper Mills, Lufkin, Texas. Slice lips, wire rolls and other parts are Monel...for lasting resistance to wear and corrosion.*

Mixed Southern groundwood and bleached Kraft stock have little corrosive effect on the Monel parts of this 234-inch ***Pusey & Jones*** news Fourdrinier.

Proof is found in tests conducted under actual operating conditions.

Stock and white water going over this machine would require 120 years to destroy a 1/16-inch sheet of MONEL by corrosion from one side!

This remarkable resistance to corrosion . . . plus high strength and the ability to withstand wear . . . accounts for the use of Monel in the ***Pusey & Jones*** wet end pictured above. And it is these qualities, too, which fit Monel especially for the uses listed at the right.

Wherever corrosion causes trouble, mills and machine builders depend on Monel. They rely also on INCO's Technical Staff which is always ready to assist or advise them in selection of the right metal or alloy for a specific job.

When *you* need help on metal and corrosion problems, write to INCO at the address below. At the same time, ask for Bulletin C-3, *Monel, Nickel and Inconel in Pulp and Paper Mills.* It contains valuable information with which you'll want to be familiar before you specify new equipment or make changes in your present machines.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK 5, N. Y.

MONEL

NICKEL (INCO) ALLOYS

MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL "Z" NICKEL • NICKEL
Sheet...Strip...Rod...Tubing...Wire...Castings...Welding Rods (Gas and Electric)

PRINCIPAL USES OF MONEL ON FOURDRINIER WET ENDS*

Apron Plates—Monel Strip.
Bolts & Other Fastenings.
Beams and Rails—Monel sheet lining over steel or cast iron.
Brace Rods—Cold-drawn Monel rods.
Breast Rolls—Monel covered construction.
Dandy Rolls—Monel body and face.
Distributor Rolls—Perforated Monel tube rolls.
Doctor Blades & Backs—Full hard Monel blades. Sheet and angles for doctor back.
Flow Boxes—Monel linings or self-supporting sheet construction, or built from Nickel-Clad Steel.
Rectifier Plates—Monel sheet.
Remover Beam Rollers—Gall resisting cast "S" Monel.
Remover Cross Drive Shafts—Cold-drawn Monel rods.
Save-All Trays and Pans—Welded Monel sheet construction.
Shaker Springs—"Z" Nickel for leaves with high stroke frequencies.
Shower Pipes & Nozzles—Monel tubing and "R" Monel rod (200BHN) for nozzles.
Slice Blades—Special Tempered cold-rolled Monel strip. Slice lips up to 250" long are supplied.
Suction Boxes—Welded Monel sheet construction.
Table Rolls—Tubing up to 5" O. D. Monel-covered steel tubes for larger diameters.
Wire Return Rolls—⅛" Monel covers over steel tubes.

**Under exposure to corrosive conditions generally met, Monel is safely used in combination with bronze and copper.*

The Purchasing Agent

—HE, TOO, HAS SERVED WELL

TOO frequently the accomplishments of Purchasing Agents and their staffs have been overlooked in discussions of American industrial might. In emphasizing production records, Purchasing achievements in providing raw materials often are omitted . . . in praising scientific and technical advances, the ingenuity of Purchasing men in locating and obtaining scarce products frequently is unnoticed.

Yes, through long hours of diligent, resourceful work, American industrial Purchasing Agents have turned in a superlative job. In paying tribute to them, Columbia renews its pledge of continued co-operation to its customers' Purchasing Agents and their staffs as they face today's new problems and responsibilities.

S

COLUMBIA CHEMICALS

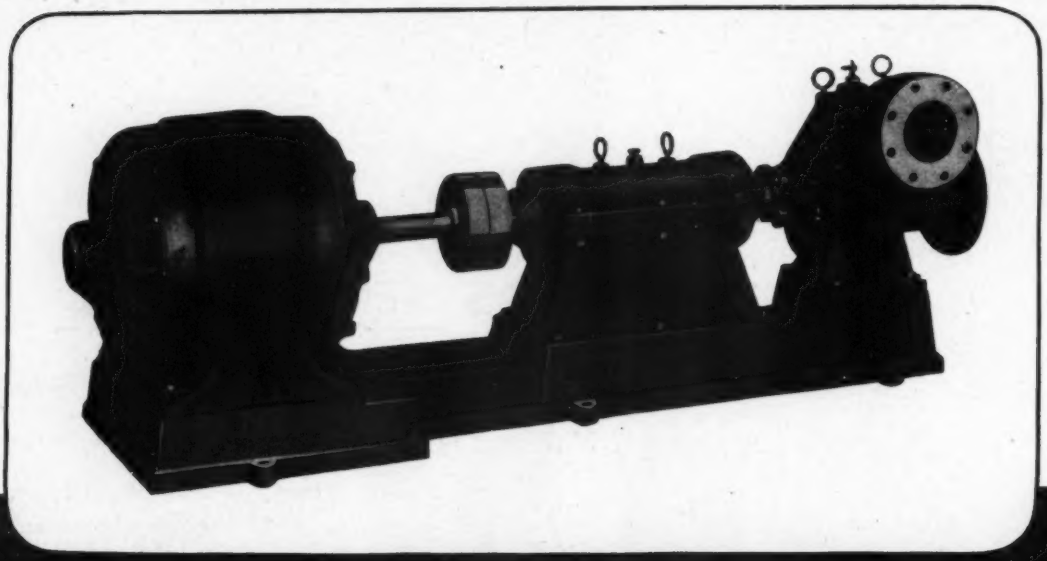
PITTSBURGH PLATE GLASS COMPANY • COLUMBIA CHEMICAL DIVISION

GRANT BUILDING, PITTSBURGH 19, PENNSYLVANIA

Chicago • Boston • St. Louis • Pittsburgh • New York • Cincinnati • Cleveland • Philadelphia • Minneapolis • Charlotte • San Francisco

COLUMBIA ESSENTIAL INDUSTRIAL CHEMICALS

Soda Ash • Caustic Soda • Sodium Bicarbonate • Liquid Chlorine • Silene EF (Hydrated Calcium Silicate) • Calcium Chloride • Soda Briquettes
Modified Sodas • Caustic Ash • Pittsflake • Calcene T (Precipitated Calcium Carbonate) • Pittsflex



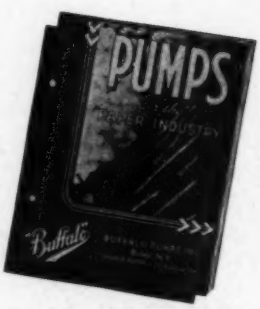
"Buffalo" "KNOW-HOW" put this pump in many mills

● Buffalo engineers designed the diagonally-split shell pump to take the hard service of stock-handling with a minimum of attention. Years of experience with solid-shell, single suction pumps and split-shell double suction pumps had demonstrated the unquestionable advantages of both types. Combining the best points of both types, the diagonally-split shell single suction pumps stand up best in service, give more efficient performance, is easier to inspect and repair when required—and, costs LESS over a period of years than many lower-priced pumps.

Since paper mill operators usually rate dependability above all other qualities in mill equipment, the over-size construction of Buffalo Diagonally-Split Shell Pumps is most important. Heavy shaft, heavy-duty ball bearings located in husky, sealed bearing housings and sturdy, enclosed, non-clogging impeller which does not depend on close-running clearances for efficiency—these are some of the internal features of design which contribute to dependability.

For inspection of impeller or replacement when finally necessary, the upper section of the split casing can be removed without disturbing inlet or discharge piping.

Your mill can use Buffalo stock pumps to advantage. Ask for Bulletin 953-F which describes the complete line.



BUFFALO PUMPS, Inc.

213 Mortimer St. **Buffalo, N. Y.**

Canada Pumps, Ltd., Kitchener, Ont.

"Buffalo" PAPER STOCK PUMPS

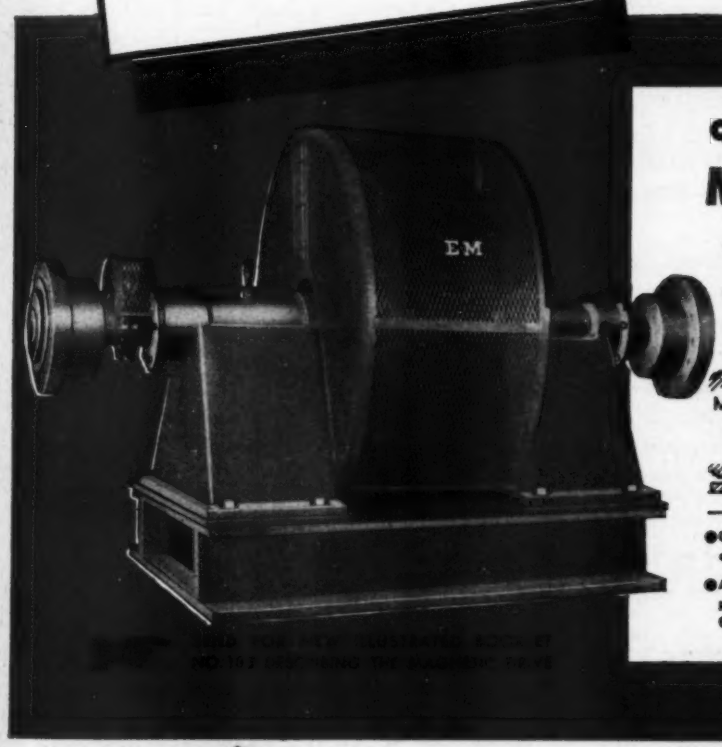
HOW TO GET ADJUSTABLE WIDE-RANGE PRECISE Speed Control FOR YOUR BOILER DRAFT FANS . . .

TODAY'S answer to how to get correct, economical speed control for boiler draft fans is the E-M *Magnetic Drive*. A compact, electro-magnetic torque-transmitting device, the *Magnetic Drive* is installed between a constant-speed motor and the fan, and operates in combination with automatic boiler draft control.

The result: *precise, quick-response, adjustable speed* of boiler draft fans from maximum speed down to 10% of motor speed.

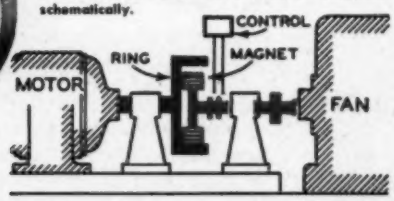
The *Magnetic Drive* permits the fan to be operated at minimum speed for given output, reducing fan wear due to erosion, lowering power consumption and operating costs. Simple in construction, the *Magnetic Drive* uses no fluids which may produce dirt or fire hazards, requires no vane control of fans You get quick speed response, over the wide range of speeds. The *Magnetic Drive* is as ruggedly built and as dependable as a motor. See your E-M field engineer now about this newer, better method of boiler draft speed control.

ELECTRIC MACHINERY MFG. CO.
MINNEAPOLIS 13, MINNESOTA



QUICK FACTS ABOUT THE Magnetic Drive

- The E-M Magnetic Drive is a simple, compact, electro-magnetic torque-transmitting device.
- It consists essentially of a ring, driven by the motor, and a magnet coupled to the fan, as illustrated schematically.



- Closely adjustable-speed from maximum down to 10% of motor speed . . . controlled electronically.
- Advantages: Precise fan speed control — Maximum fan power economy — Minimum fan wear from erosion — Quick speed response — Simple rugged construction.

EM

Adjustable-Speed MAGNETIC DRIVES

Pay for themselves through better boiler control, longer fan life, and power savings!

A2021

EVERLASTING

against the ravages of time

For countless ages, the Pyramids of Egypt have withstood the disintegrating forces of time and the elements. In comparison with the span of human life, the Pyramids are everlasting. In applications without number, Harper bolts, nuts and other fastenings resist rust, corrosion and other destructive conditions. Compared with assemblies they hold together . . . or with common steel bolts . . . Harper Fastenings are everlasting.

everlasting fastenings

Harper stocks include over 4360 items of bolts, screws, nails, and other fastenings made of brass, bronze, copper, Monel or stainless (none of common steel). Specials made to order. Write for 104 page 4-color catalog.

THE H. M. HARPER CO.
2647 FLETCHER ST. • CHICAGO 18, ILL.

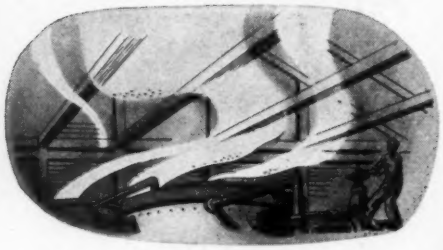
BRANCH OFFICES:
New York City • Philadelphia
Los Angeles • Milwaukee
Cincinnati • Houston
Representatives in Principal Cities

BRASS • BRONZE
COPPER • MONEL
STAINLESS

HARPER
Chicago

ALL STEAMED UP

But not Going to Go



Steam* and chemical-laden vapors give ceiling and roof structures of wet process plants an awful beating. Ordinary lumber decays and other materials often go to pieces in a hurry. Wolmanized Lumber*, wood that's impregnated with Wolman Salts* preservative, is highly resistant to this attack. Its use adds years of service life here.

PRESSURE TREATMENT does the trick

Driving the preservative deep into the wood, under great pressure in steel retorts, is what does the trick. Protection is there for keeps. The excellent performance of hundreds of millions of feet of lumber so treated testifies to the worth of Wolmanized Lumber.

1658 McCORMICK BUILDING, CHICAGO 4, ILLINOIS

3 Types of PULPSTONES to meet all Ground-wood Requirements

ALUNDUM Abrasive
Regular Structure

38 ALUNDUM Abrasive
Open Structure

CRYSTOLON Abrasive
Regular Structure

INDIVIDUALLY ENGINEERED to your operating conditions — that's the Norton Pulpstone.

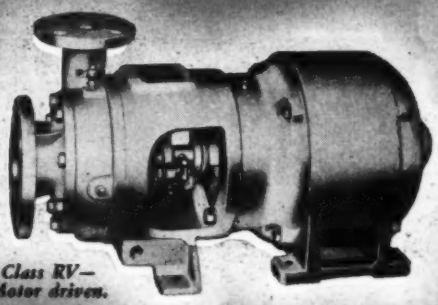
The three types of Norton abrasives, the many grain sizes, the many degrees of hardness and the several structures make it possible to design a pulpstone that is exactly right for you — taking into consideration the kind of grinders in your mill and their power input, the type of wood you are grinding and the quality of pulp you desire.

Norton engineering service is ready to study your requirements and prescribe Norton Pulpstones in just the right specifications.

NORTON COMPANY
Worcester 6, Massachusetts
Norton Company of Canada, Ltd., Hamilton, Ont.

NORTON ABRASIVES

Class CRV—Cradle-mounted.



Class RV—Motor driven.

THE MOTORPUMP FITS YOUR JOB . . . .

Exactly

Class TRV—Turbine driven.

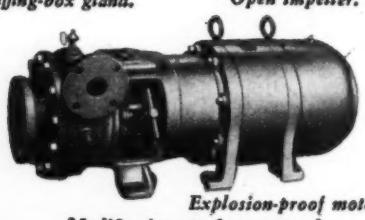
The Cameron

MOTORPUMP

—an Ingersoll Rand Product

Smothering-type stuffing-box gland.

Open impeller.



Explosion-proof motor.

Modifications to fit your needs.

The Motorpump is not one pump—it is many pumps—one with built-in motor, one with built-in turbine, one on a cradle that enables you to change drivers, or one with special features for a particular service.

This is possible because Motorpumps are built as a completely integrated line . . . built to accommodate different drivers and special accessories without costly change of the basic units.

Furthermore, Motorpumps are *quality* units . . . made with the same wear-resisting features incorporated in larger Ingersoll-Rand pumps and—highly efficient, which keeps motor sizes small and power consumption low. They are available in a complete range of sizes for capacities up to 1800 gal per min—heads up to 600 ft.

Ask an Ingersoll-Rand engineer to give you complete details. He will be glad to leave a copy of our bulletin 7093. This gives complete details including dimensions, selection charts, and other essential details. Ingersoll-Rand Company, Cameron Pump Division, 11 Broadway, New York 4, N. Y.

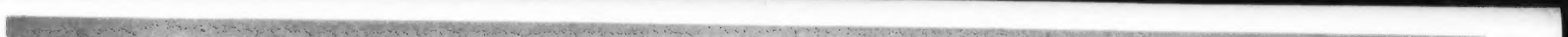
AIR TOOLS
COMPRESSORS
ROCK DRILLS
TURBO BLOWERS
CONDENSERS
CENTRIFUGAL PUMPS
OIL & GAS ENGINES

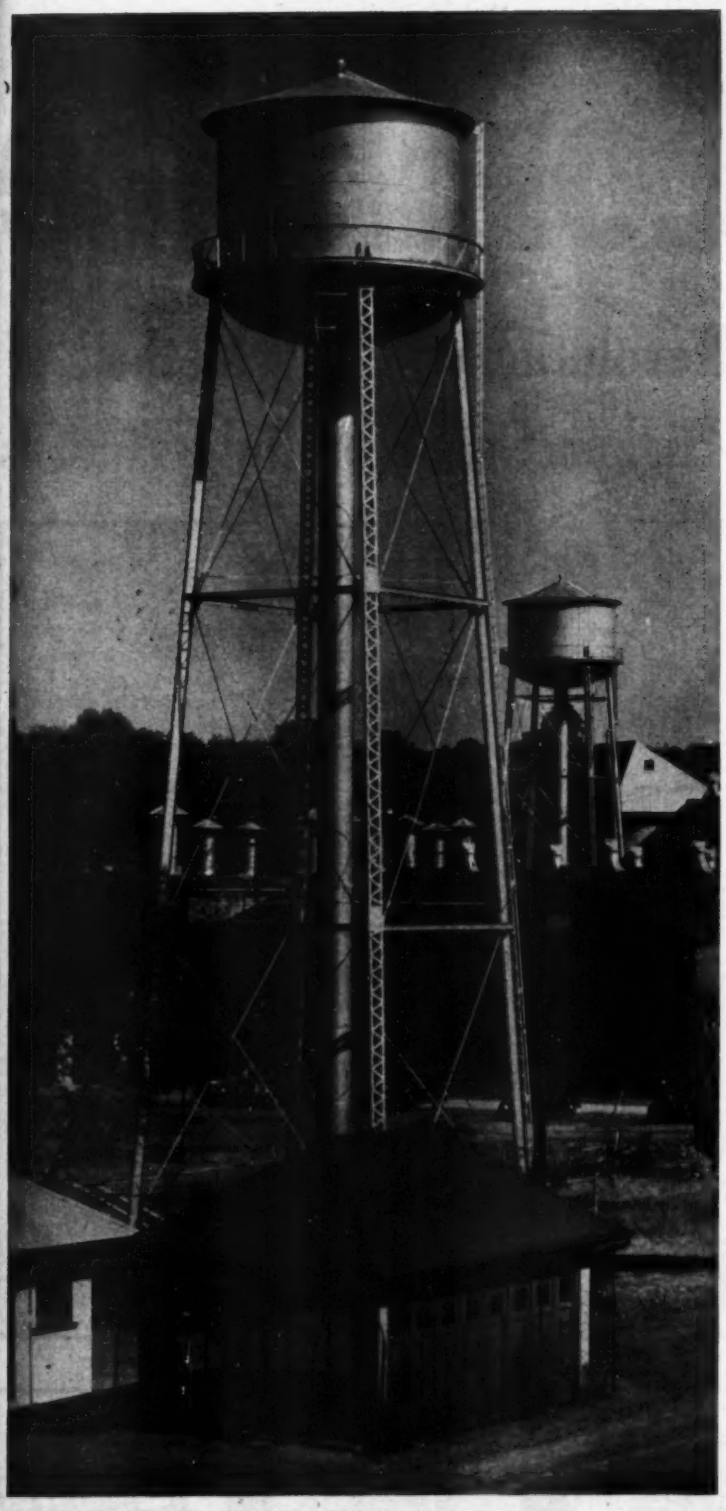
Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

CAMERON PUMP DIVISION

9-708





TWO HORTON ELEVATED TANKS

. . . provide water for general mill service and for fire protection at a paper mill in the East.

● Horton elevated water storage tanks are widely used by pulp and paper mills for both general water service and fire protection. The view at the left shows a 40,000-gal. and a 60,000-gal. Horton elevated tank at the same mill. The tank in the background, which is the larger of the two, was erected first and was originally piped as a dual purpose tank—the capacity of the upper half being used for general mill service and the lower half for fire protection. This year the entire capacity of the 60,000-gal. tank was converted to mill service only and the new tank in the foreground was erected to provide gravity water pressure for the automatic fire protection system.

Automatic sprinkler systems usually require elevated storage tanks with a capacity of 50,000 to 250,000 gals. Horton elevated tanks for this service are built to meet the requirements of insurance rating groups and engineering departments of insurance companies. If you are considering the installation of a new sprinkler system, or if you require additional water storage facilities for general service, write our nearest office for estimating figures.

The two Horton elevated water storage tanks shown at the left are used for two distinct services at a paper mill. The one in the background has a capacity of 60,000 gals. and is used for general mill service. The one in the foreground has a capacity of 40,000 gals. and is connected to the fire protection system.

CHICAGO BRIDGE & IRON COMPANY

Chicago, 4.....2445 McCormick Building
New York, 6.....3350-165 Broadway Building
Cleveland, 15.....2267½ Guildhall Building
Los Angeles, 14.....1439 Wm. Fox Building
Birmingham, 1.....1511 North 50th Street
Atlanta, 3.....2143 Healey Building

Tulsa, 8.....1651 Hunt Building
Houston, 1.....5643 Clinton Drive
Philadelphia, 3.....1653-1700 Walnut Street Building
Washington, 4.....703 Atlantic Building
San Francisco, 11.....1217-22 Battery Street Building
Havana.....Edificio Abreu 402

Plants at BIRMINGHAM, CHICAGO and GREENVILLE, PENNA.

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

PROVE TO YOURSELF! Compare

See How This Revolutionary New Method of —Bigger Savings—Higher Grade of Pulp Than is

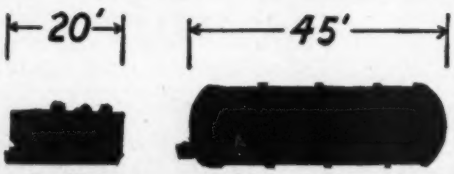
COMPARE WOOD LOSSES!

Many mills using out-moded barking equipment experience unnecessarily high wood losses . . . in saw kerf, brooming, through rossing, hand-cleaning, chipping, etc. In such mills A-C's new "Streambarker" *materially reduces* loss — because it can *eliminate* brooming, rossing and hand-cleaning — can *minimize* saw kerf and chipper loss!

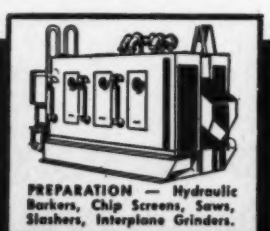
COMPARE OPERATIONS!

The old way—not only *higher* wood losses, but *more* equipment, *more* operations than with the new, improved "Streambarker" method! In many cases, "Streambarker" *can eliminate* slashers, rossers, hand-cleaning tools—*can reduce* number and length of conveyors—can clean logs better and at lower cost than by other methods!

COMPARE SPACE!



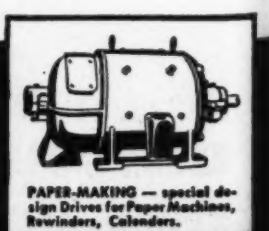
"Streambarker" requires *far less* space than conventional barking equipment. Compare its 20 by 7 ft. size with that of a 45 by 12 ft. drum barker and you *see* what we mean! By eliminating and simplifying related equipment it provides still more room, reduces housing cost! Want more information? Call or write for Bulletin B6341. A1964



PREPARATION — Hydraulic Barkers, Chip Screens, Saws, Slashers, Interplane Grinders.

COOKING — Digesters, Blow Tanks, Kilns, Slakers, Heat Exchangers, Condensers.

WET ROOM — vibrating-type screens for use as Thickeners, for dewatering rejects.

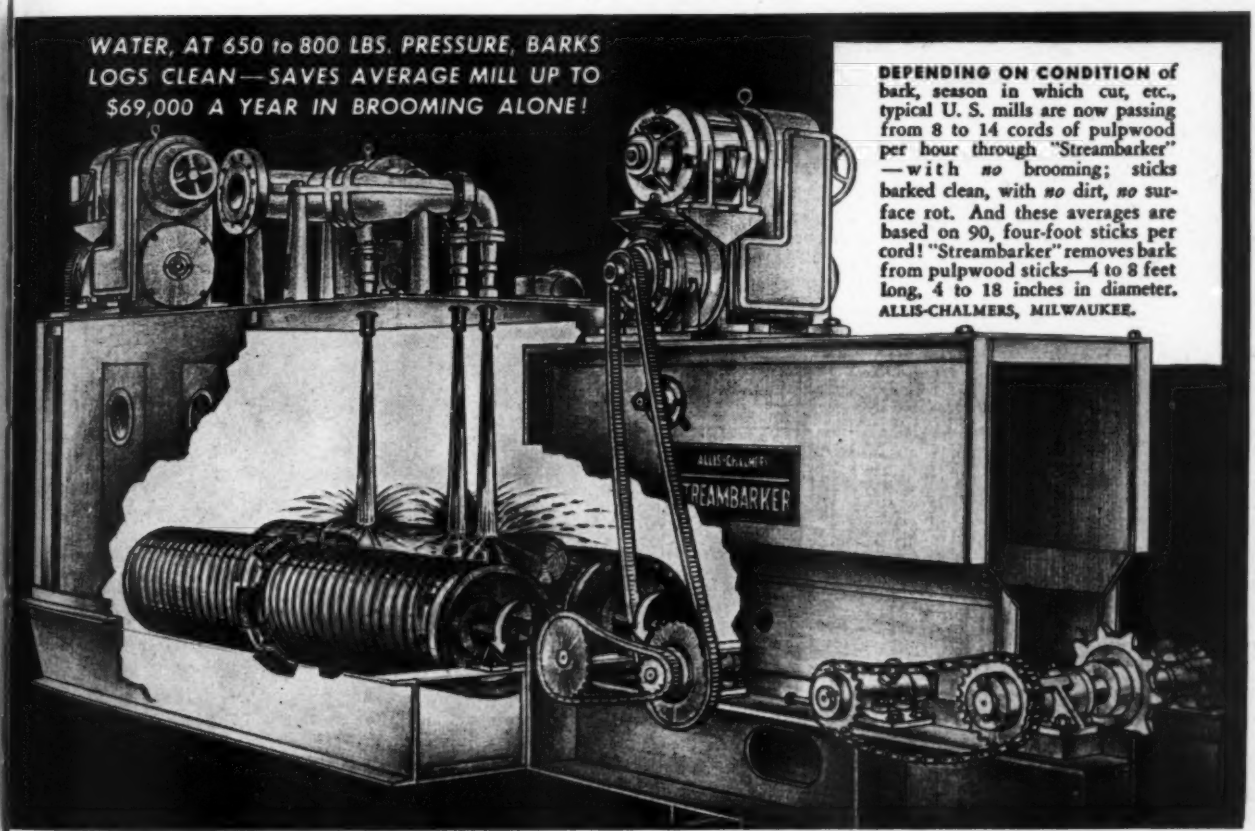


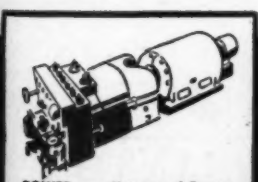
PAPER-MAKING — special design Drives for Paper Machines, Rewinders, Calenders.

ALLIS CHALMERS

Streambarker

Hydraulic Barking Gives You Bigger Production Possible with Conventional Barking Equipment!

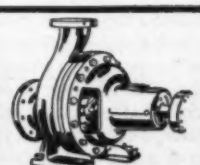

WATER, AT 650 to 800 LBS. PRESSURE, BARKS LOGS CLEAN—SAVES AVERAGE MILL UP TO $69,000 A YEAR IN BROOMING ALONE!
DEPENDING ON CONDITION of bark, season in which cut, etc., typical U. S. mills are now passing from 8 to 14 cords of pulpwood per hour through "Streambarker"—with no brooming; sticks barked clean, with no dirt, no surface rot. And these averages are based on 90, four-foot sticks per cord! "Streambarker" removes bark from pulpwood sticks—4 to 8 feet long, 4 to 18 inches in diameter.
ALLIS-CHALMERS, MILWAUKEE.
TREAMBARKER



POWER — all types of Power Generation, Distribution and Control Equipment.

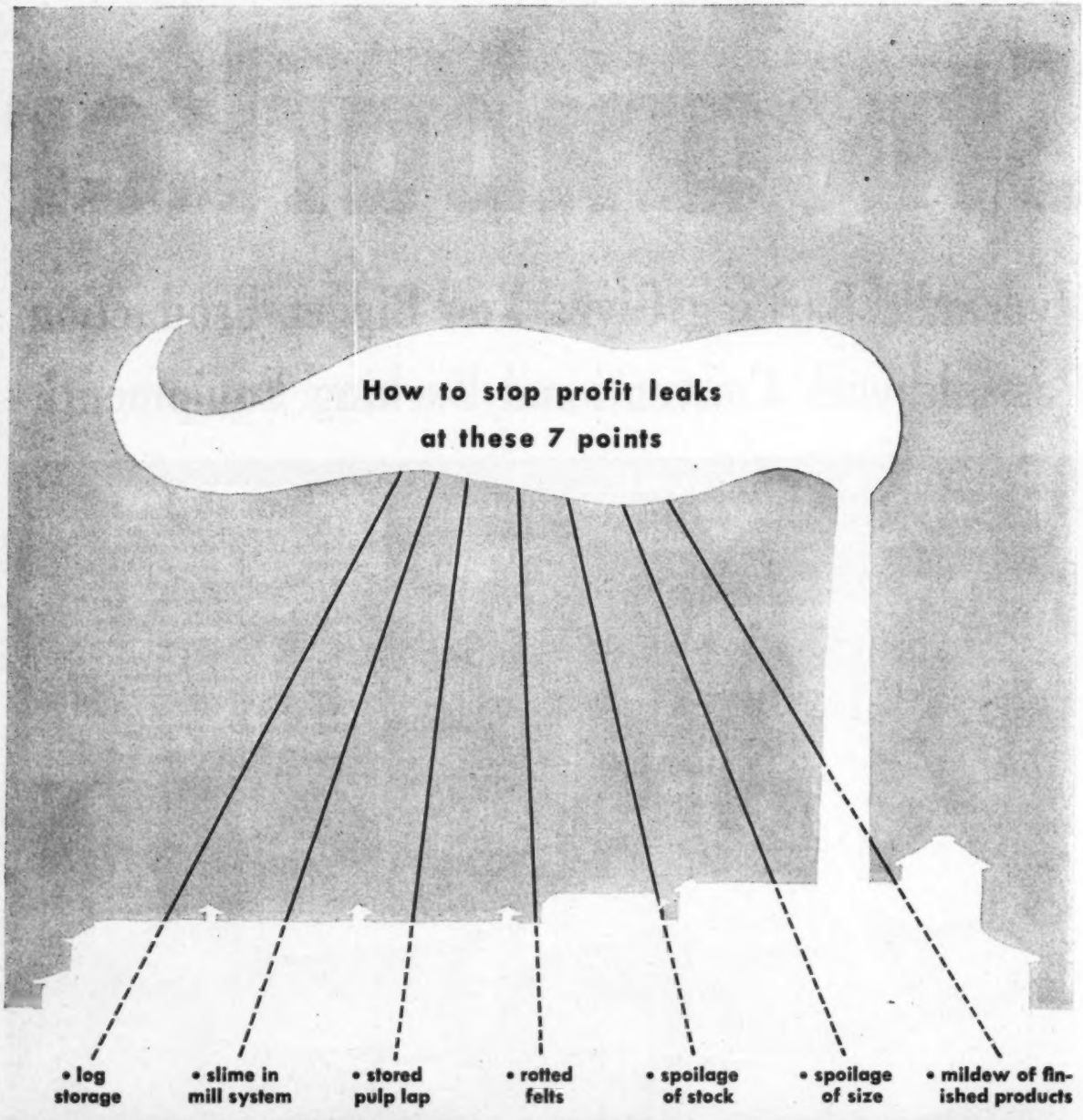
MOTORS & CONTROLS — all types a-c and d-c Motors, ½ to 7000 hp — Gearmotors.

TEXROPE V-BELT DRIVES — fractional to 5000 hp — Constant and Adjustable speed.



PUMPS — Single & Multi-Stage, 10 to 150,000 gpm — Paper Stock Pumps, Fan Pumps.

MILWAUKEE 1, WIS.


How to stop profit leaks
at these 7 points
• log storage
• slime in mill system
• stored pulp lap
• rotted felts
• spoilage of stock
• spoilage of size
• mildew of finished products

From first step to last in every pulp and paper mill, there's the ever present danger of destructive micro-biological activity. Good housekeeping reduces the extent of the problems but does not eliminate them. Chlorine and chlorine with ammonia are often effective for control of slime, but have little value to the solution of other problems.

Mill experience has proved that one certain way of controlling paper mill organisms wherever they occur is with Santobrite,* Monsanto's sodium salt of pentachlorophenol. Your mill may not need protection in every one of these seven danger spots, but it's safe to assume it could profit by the use of Santobrite in several of them.

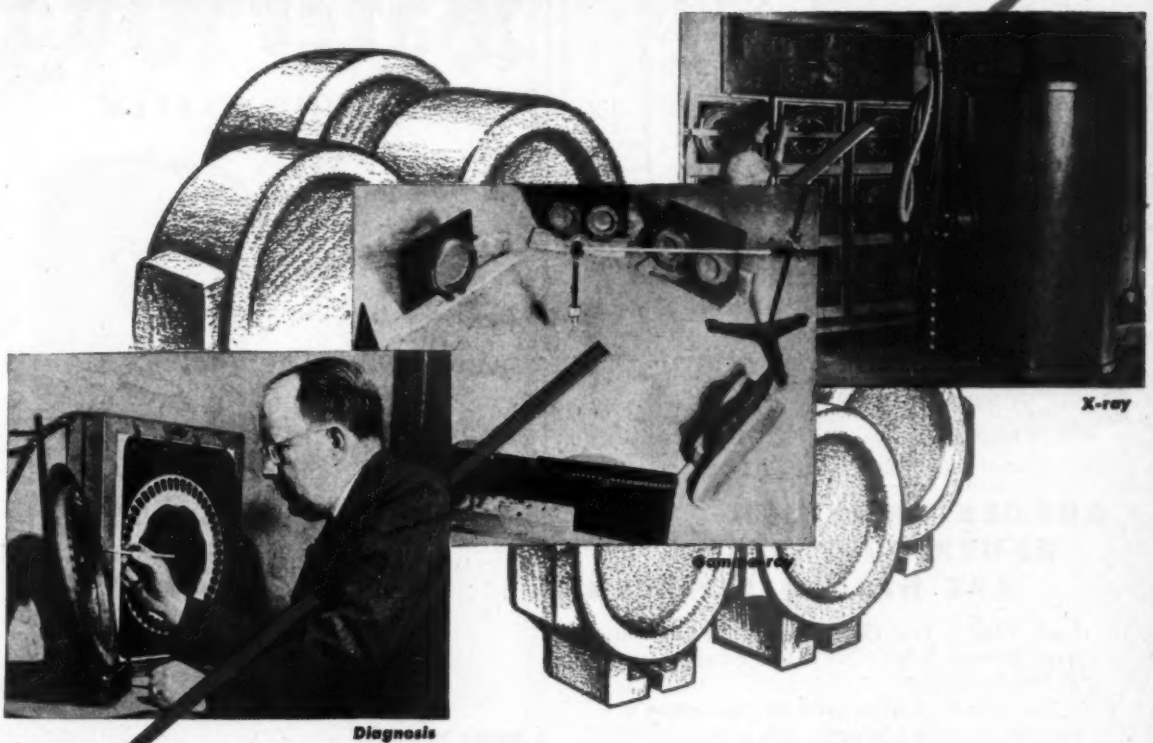
Santobrite is chemically stable, non-corrosive to equipment, comparatively odorless, and when properly handled is safe to use. Its unit cost is relatively low and the suggested applications are economical.

How to counteract micro-organism activity in your mill scientifically and efficiently is the subject of Bulletin O-5, "Santobrite, for Micro-Organism Control in the Pulp and Paper Industry," which is yours for the asking. Simply address: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, St. Louis 4, Mo. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Seattle, Montreal, Toronto.

Reg. U.S. Pat. Off.

MONSANTO CHEMICALS
SERVING INDUSTRY...WHICH SERVES MANKIND

THREE KINDS OF "EYES"



LOOK THROUGH *Cooper* STAINLESS CASTINGS

At the Cooper Alloy Foundry we use three kinds of "eyes" to check the soundness of castings. We use three because all three are necessary to do a thorough, economical job — for your complete assurance. These "eyes" are: X-rays and Gamma-rays plus expert human eyes that are trained to interpret the results of radiographic pictures.

You can get the benefits of the most modern equipment plus skilled use of such equipment by specifying Cooper Stainless Castings — Radiographed by Cooper.

THE COOPER ALLOY FOUNDRY CO.
125 BLOY ST., HILLSIDE, N. J.

THE ONLY ALLOY FOUNDRY WITH ALL THESE FACILITIES

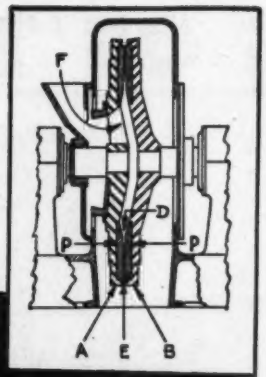
- Laboratory control over raw materials and finished products.
- Dual foundry . . . both hand and machine molding.
- Electric arc and high-frequency induction melting furnaces.
- Centrifugally-cast castings.
- Heat treating of Castings up to six feet.
- X-ray and Gamma-ray inspection.
- Precision Castings.
- Machine shop . . . specially equipped for finishing stainless steel.
- Improved cleaning . . . including Lustracast electrolytic finishing which leaves all surfaces bright.
- Castings furnished rough, polished or fully machined . . . one ounce to two tons.
- Development of special alloys to meet unusual requirements.
- Technical consulting service.
- Zyglo detection of surface imperfections.

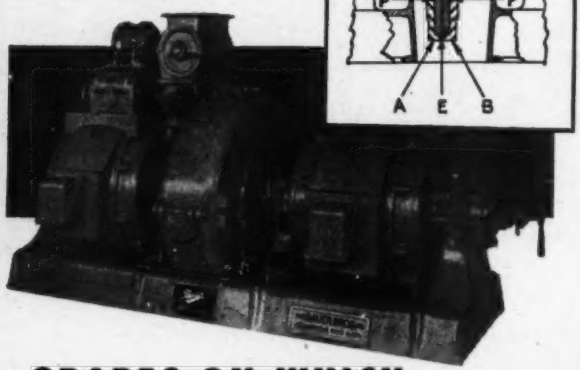
THE *Cooper* ALLOY FOUNDRY CO.

STAINLESS • MONEL • NICKEL

Bauer Pulpers are in service in: The United States, Canada, Mexico, Hawaii, New Zealand, Australia, India, Sweden, Russia.

Stock enters at F; passes between Plates PP at D, positioned between Disks A and B . . . and is discharged at E.





GRADES ON WHICH BAUER PULPERS ARE HIGHLY EFFICIENT

Long, Pliable, Free Fiber, from Many Different Raw Material Sources for Almost Every Grade of Finished Output.

The tabulation of actual mill applications below will interest you—give you a clear picture of the range of work obtainable with Bauer equipment.

- For all types of Insulating Board and Wallboard and Hardboard Production and for Plastics of Various Grades.
- Semi-Chemically Cooked woods for Manufacture of .009 for Corrugating and for Wallboard.
- For removal of shive from Soda Pulp for printing paper.
- For manufacture of Newsprint, special Wrapper Stock, Board, and Specialties.
- For production of various grades of Kraft Board and Kraft Bag Papers.
- For use in Paper Board Manufacture as filler and Liner; for Auto Panel Board; for Wallboard Filler; in preparation for De-inking Processes; wherever freeness, freedom from cutting, uniformity, and complete defibering is required.

THE BAUER BROS. CO.
SPRINGFIELD, OHIO

ARMY E NAVY
Bauer

Peerless presents the Water King PUMPING SYSTEM

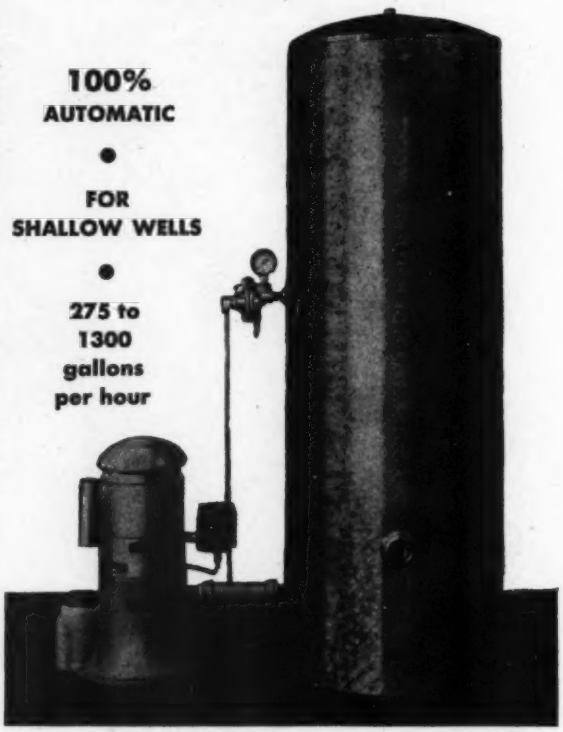
100% AUTOMATIC

•

FOR SHALLOW WELLS

•

275 to 1300 gallons per hour



Embodies magic intracentric water-lift

Applying a revolutionary water-lifting principle, with a magic pumping element intracentrically positioned within the pump case, Peerless presents the most advanced Pumping System—the *Water King*. The pumping element is the famous Peerless Hi-Lift, ingeniously applied in simplest form. Pressure maintained automatically. Silent, smooth, non-pulsating operation. Pump can be installed over-well or off-set. Heavy-duty, capacitor type motor. 1/6 to 3/4 h.p. No moving parts below surface. Water-lubricated. No sand cutting. Streamline design.

Peerless JET Water System

Improved design. For deep or shallow wells. Over-well or off-set. Capacities 300 to 5000 gallons per hour. 100% automatic.

Peerless Distributors and Direct Factory Representatives are located in every State. Ask for name of Distributor nearest you.

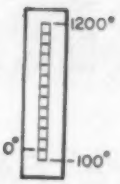
PEERLESS PUMPS

PEERLESS PUMP DIVISION
Food Machinery Corp.

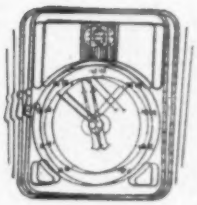
FACTORIES
LOS ANGELES 31, CALIFORNIA
301 West Avenue Twenty-six
QUINCY, ILL. • CANTON 6, OHIO

MEET THE BAILEY PYROTRON

A New Electronic Resistance Thermometer and Controller



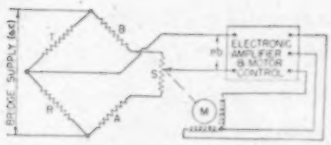
Indicates, records and controls temperatures between —100°F. and 1200°F.



Resists vibration and shock.

Needs no careful leveling.

Makes as many as four continuous temperature records on one chart.

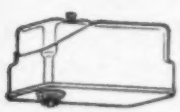


T-TEMPERATURE SENSITIVE PLATINUM RESISTANCE
A,B & R-FIXED RESISTORS M-SLIDEWIRE DRIVE MOTOR
S-SLIDEWIRE

Provides a complete measuring system for each temperature record—always connected and ready for immediate response.

Simple a-c measuring bridge needs no battery.

Sturdy inertia-free electronic unit which keeps the bridge in continuous balance replaces the usual Galvanometer and its attendant mechanism for step by step balancing.



Strikes new high in easy accessibility and interchangeability of electronic, electrical and mechanical parts. Replacement parts may be obtained as packaged units.

Offers choice of three controls—1. Air; 2. Electronic; 3. Electric, On-Off.

For details on this unusual electronic resistance thermometer, ask for Bulletin 230-A.

P-7

BAILEY METER COMPANY

1058 IVANHOE ROAD • • • CLEVELAND 10, OHIO

Controls for Processing

TEMPERATURE
PRESSURE
% OXYGEN
% COMBUSTIBLES
FLOW
LEVEL
DENSITY
RATIO

GENERAL AMERI

WE HAVE FACILITIES AND EXPERIENCE

CONKEY EVAPORATORS FOR PULP MILLS

Conkey Evaporating Equipment for pulp mills includes:

Evaporators for multiple effect economy in the concentration of soda and sulphate black liquors.

Recirculation types for the concentration of sulphite mill waste liquors.

Forced Circulation high concentrators for carrying concentrates of ultimate high density.

Special Conkey design assures minimum entrainment loss — high heat transfer — accessibility — low maintenance.

CONKEY FILTERS AND EVAPORATORS, TURBO-MIXERS, PETERSON SYNCRO-DRUM FILTERS, GENERAL AMERICAN HYDROSEPARATORS AND CLASSIFIERS, AMERICAN DRUM DRYERS, REICH PROCESSES, LOUISVILLE DRYERS, COOLERS AND PRESSES

GENERAL AMERICAN TRANS

PROCESS EQUIPMENT DIVISION

● *General Sales Office:* 514a Graybar

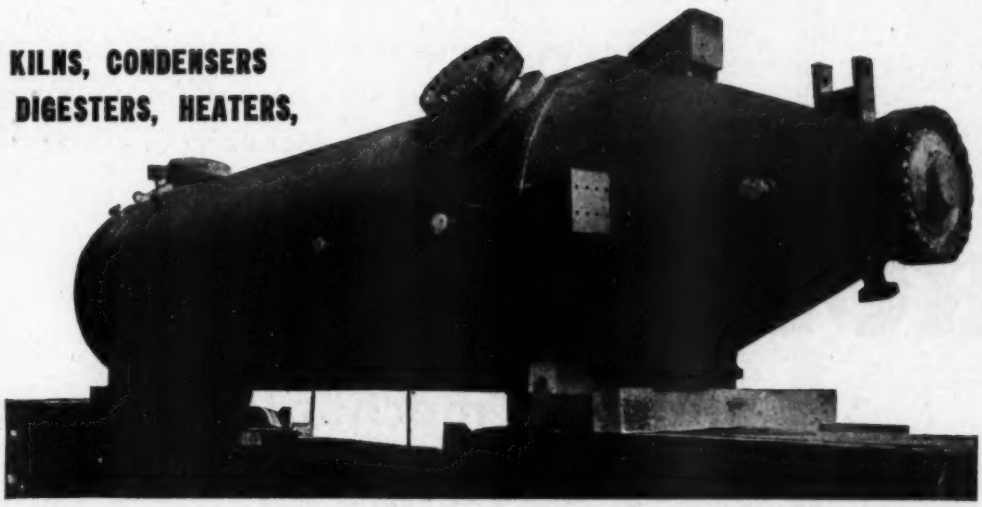
● *Sales Offices:* Chicago . . . Sharon . . . Louisville . . . Cleveland . . . Pittsburgh . . .

● *Plants:* Sharon, Pennsylvania

CAN designs and builds

TO HELP SOLVE YOUR PROBLEMS

TANKS, KILNS, CONDENSERS
STILLS, DIGESTERS, HEATERS,



PRESSURE VESSELS, CRYSTALLIZERS, CONDENSERS, BINS, HEAT EXCHANGERS, MIXING KETTLES, PREHEATERS, STACKS, PENSTOCKS, SCRUBBERS, PLATE FABRICATION OF EVERY KIND

You name it — we'll build it! The Plate and Welding Division is completely equipped for *any* plate fabrication, from *any* metal, welded or riveted. Facilities include X-ray, heat-treating, stress-relieving, and an experienced Erection Department. Write!

PORTATION CORPORATION

PLATE AND WELDING DIVISION

Building, New York 17, New York

St. Louis . . . Salt Lake City . . . San Francisco . . . Tampa . . . Washington, D. C. and Louisville, Kentucky

ALPHA* PROTEIN

Glidden's chemically-isolated pure protein, made from the soybean, now available in reasonable quantities.

Used in the paper industry for Prosize (beater sizing) tub and calender sizing and as an adhesive for use in the manufacture of coated paper and paperboard.

PROSEIN*

Glidden's mechanically refined soybean protein adhesive product-currently available

for use in the manufacture of washable wallpapers. Also for extending Alpha* Protein and casein in paper coatings.

*Trademarks Registered U. S. Pat. Off.

For information write:

THE GLIDDEN COMPANY

Soya Products Division • 5165 W. Moffat St., Chicago 39, Ill.

HANDLING+Processing+HANDLING+Assembling+HANDLING+Packing+HANDLING+Storage+HANDLING

HANDLING—the Common Denominator of PRODUCTION

LET MEN DIRECT POWER—NOT GENERATE IT!

Hazards in handling operations emphasize the need for mechanical handling equipment. Workmen ought not to be exposed to the risk of strain and injury when this work can be accomplished far more safely, in less time and at lower cost with the proper equipment.

One man, directing Towmotor power, can lift, move and stack larger, heavier loads without increased effort and in complete safety. The Towmotor DATA FILE gives complete details. Your copy will be sent upon request.

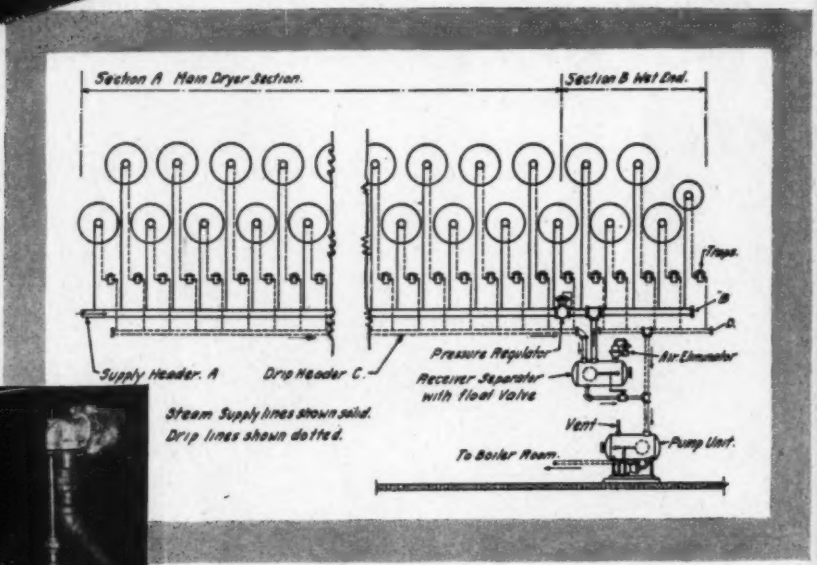
TOWMOTOR

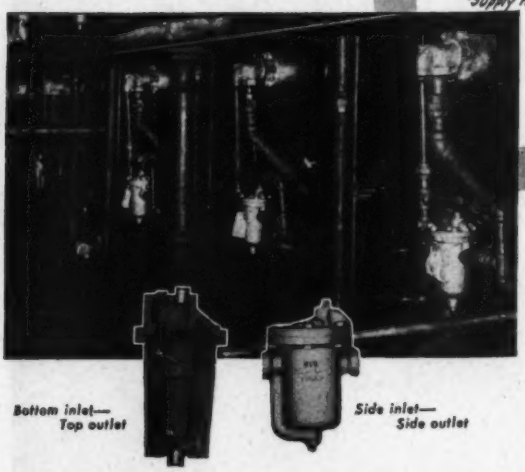
THE ONE-MAN-GANG

TOWMOTOR CORPORATION • 1220 E. 152ND STREET, CLEVELAND 10, OHIO

MORE UNIFORM PAPER DRYING

now possible through Individual Control of each dryer!





Armstrong provides a complete line of steam traps admirably suited to all requirements of paper mills. High capacity, compact design, ability to discharge air along with condensate, ability to discharge all ordinary dirt and scale without clogging, freedom from wire-drawing, stainless steel bucket and valve lever, chrome steel valve and seat (hardened, ground and lapped), choice of body styles — These are features that make Armstrong Traps popular with engineers who like trouble-free equipment. Available for pressures up to 2400 psi., capacities to 300,000 lbs. per hour.

For data, prices, capacities, material on condensate drainage practice, maintenance, trouble-shooting write for 36 page STEAM TRAP BOOK.

IF THERE ARE marked variations in individual dryer temperatures in the main drying section of your machine or if dryer temperatures are not up to maximum temperature possible with the steam pressure being used, it will be worth your while to check the benefits of an Armstrong Dryer Drainage System. Only if you have efficient drying can you realize full production and full return on the mill investment.

The Armstrong System is based upon an *individual steam trap for each dryer.* THEY ARE NOT STANDARD TRAPS. They were designed *solely* for dryer drainage service. The entire success of the system depends upon this.

The Armstrong System includes these advantages:

- Removes all *air* as well as condensate. (20% air in a dryer at 10 psi. will reduce temperature 12° F.)
- Provides maximum temperature for all dryers on the machine.
- Does not waste steam nor upset heat balance of the mill.
- Permits desired variation in steam pressure on any section of the machine by adjustment of steam control valve only.
- Completely automatic and quickly responsive to pressure changes.

For a more thorough discussion of this subject, write for "OBSERVATIONS ON DRYER DRAINAGE SYSTEMS".

ARMSTRONG MACHINE WORKS

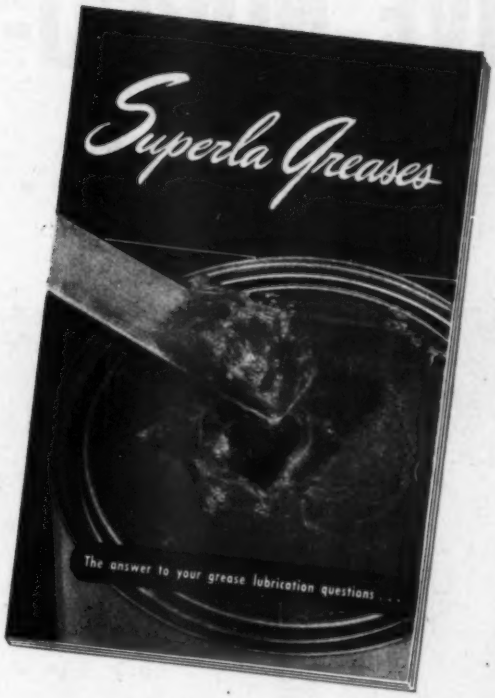
816 Hoffmann Street, Three Rivers, Michigan

Inverted Bucket Steam Traps for Every Paper Mill Requirement

Dryer Drainage System Trapping and Engineering

LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . .

One complete line of greases ...Superla greases



Can replace many special, premium priced greases on a wide range of applications.

SUPERLA GREASES in your plant will simplify your lubricating problem. This line of greases, in two types—Superla Numbered Greases and Superla "X" Greases—will handle most anti-friction bearing lubrication jobs—from low to high speeds and low to high temperatures.

In many instances, Superla Greases have replaced special greases and thus have simplified the job of ordering, stocking, and applying lubricants. This advantage of wide application is the result of combining many grease qualities in one line of high-grade lubricants. You can find out what these qualities are and what they mean in better lubrication by getting the booklet illustrated. In applying these greases to your particular job you can get valuable help from a Standard Oil Lubrication Engineer. You can reach him through the nearest Standard Oil Company office.

Send for a copy of this booklet

It describes the characteristics of the various grades in the Superla Grease line and suggests applications. Simply write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, for your copy.

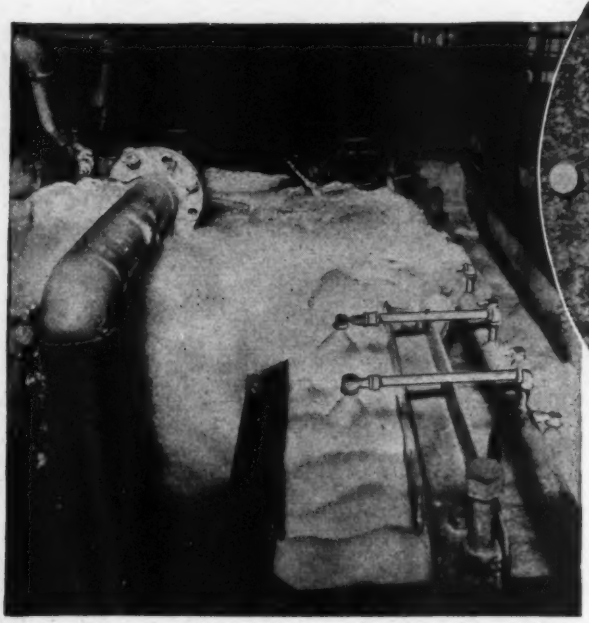
Buy and hold more Victory Bonds

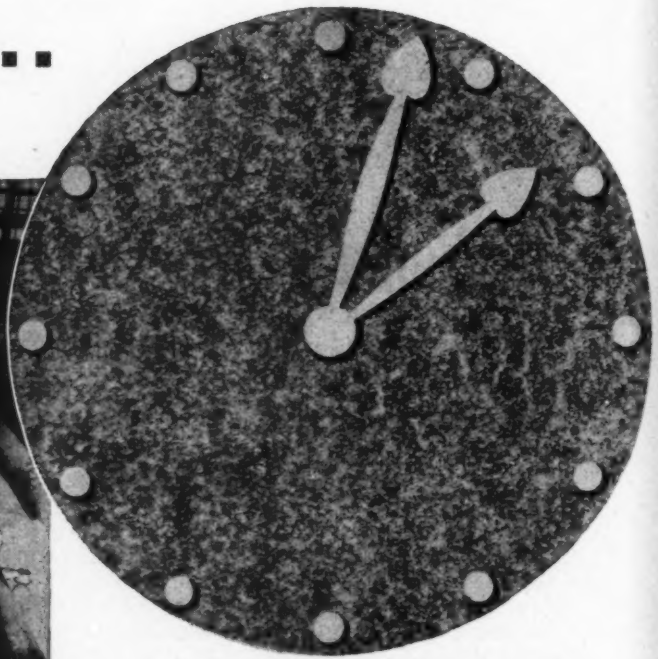
SUPERLA GREASES

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

GIVE NOPCO-KF 5 MINUTES

to smash foam...





... and improve sheet formation even at increased machine speeds

FOAM in the head-box cut in two minutes? All bubbles cleared from the wire in five minutes? These are familiar occurrences in mills using NOPCO-KF in paper manufacturing. NOPCO-KF also saves labor by helping to prevent sticking at the presses.

Sheet formation is improved as a result of better fibre dispersion and foam control. Even in capacity operations NOPCO-KF proves the super "bubble-buster," dissipating entrained air—the common cause of thin spots—as if the stock were being handled at slower speeds. That's because NOPCO-KF keeps working on the wire.

Thin Spots 75% Eliminated

In addition, NOPCO-KF helps reduce breaks, improve surface characteristics, increase water repellency. Valuable paper-making material is conserved. See what this chemical substance—expressly formulated to aid sheet formation—can do in your mill. Order enough for a trial run. Write, wire or phone.

NATIONAL OIL PRODUCTS COMPANY, Harrison, N. J.

Branches:

Boston • Chicago • Cedartown, Ga. • Richmond, Calif.

An affiliate of the American Pulp and Paper Mill Superintendents Association

NOPCO-KF

Reg. U.S. Pat. Off.

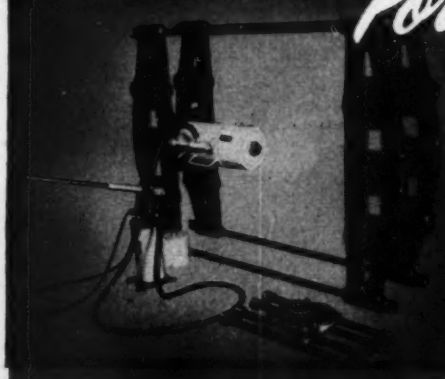
NOPCO EVOLVED THRU RESEARCH

2 unusual hydraulic PRESSES

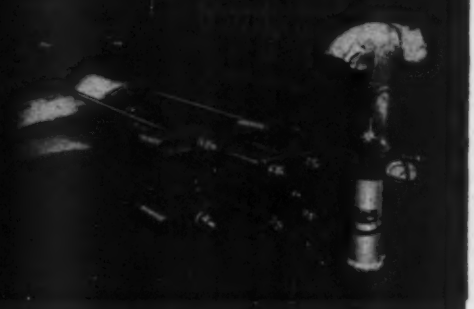
that can save you Time, Labor and Trouble

on 101 maintenance, service and special jobs.

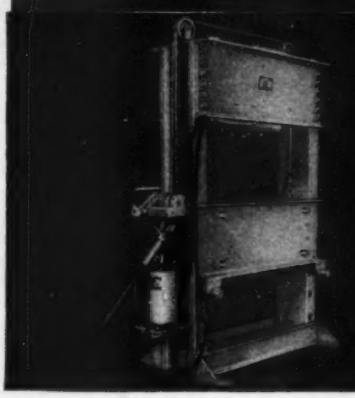
Portable



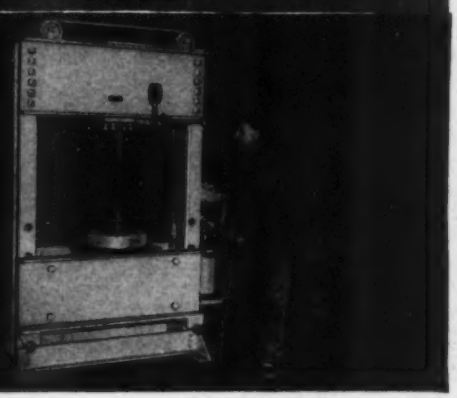
Left: Here is a Rodgers 200 ton Universal with back plate and rods shown beside it. At right is a Rodgers Universal mounted around a large pitman to pull the shaft. Real power—easy to use!



Flexible



Left: A Rodgers 100 ton Shop Press—study its simplicity—note pins below bed for increasing opening—hand pump mounted on side. Right: A bushing is easily pressed into a sheave with a few strokes of the hand pump.



STOP and think of all the uses you can find for these versatile Rodgers Presses — pulling gears, pinions and wheels; pressing shafts, bushings and pins, squeezing, clamping and jacking operations —wherever you need 50 to 200 tons of easily-applied hydraulic power.

The Rodgers Universal is a unique portable unit for field or shop service. It is used on a stand as an ordinary press, on its side or flat and is easily assembled around equipment for special operations. Rodgers Hydraulic Hand Pump or Power Pump supplies power.

A Rodgers Shop Press is a flexible unit with a bed that is easily raised or lowered to accommodate various size work. Cylinder may be adjusted across entire width of bed. Rodgers Hand Pump or Power Pump furnishes pressure.

If you have equipment to service you can save yourself hours of time and labor with a Rodgers—they often pay for themselves on a tough job or two. Write for *all* the details. It will be profitable.

Send for this new catalog . . .

It will give you complete information on Rodgers Hydraulic Presses. No obligation, of course. Write today.

Rodgers Hydraulic, Inc.

hydraulic power equipment

Shop Presses

Crawler-Track Presses

7457 Walker St., St. Louis Park, Minneapolis 16, Minn.

Power Pump Units

Portable Presses

OUR FINAL ENEMY SURRENDERS!

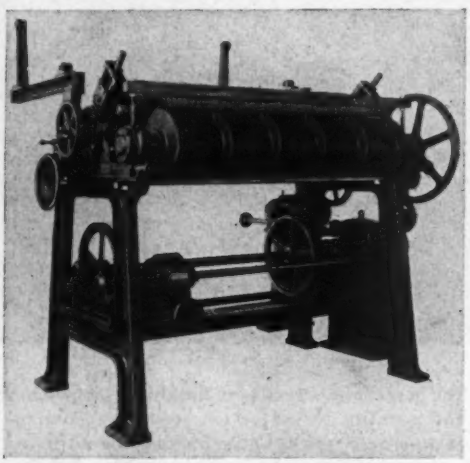
THE NOISE OF BATTLE IS STILLED
MAY "PEACE" AMONG ALL NATIONS
BE AN IMPELLING FORCE.

SINCE 1828 . . . WE HAVE SERVED
THE PAPER INDUSTRY
WITH THE FINEST IN

PAPER MILL MACHINERY

During the long hard years of World War II our engineering and manufacturing facilities were concentrated without reserve on the production of units vitally needed by our Armed Forces.

Now . . . these facilities are available to the paper mills and The Paper Trade for the repair or rebuilding of machines or replacement with new units of Improved Design and Efficiency.



Our rotary spot cutter—all anti-friction bearings—for cutting preprinted rolls of paper to mark—manual or photoelectric control.

CYLINDER AND FOURDRINIER MACHINES
STUFF PUMPS — JORDAN ENGINES
"RAINSTORM" SHOWER PIPES

PAPER BAGMAKING MACHINERY

THE MODEL "E" UNDERCUT TRIMMER

Production and deliveries will by necessity be governed by the availability of controlled materials and skilled labor.

THE SMITH & WINCHESTER
Manufacturing Company
SOUTH WINDHAM • CONNECTICUT

Although that sounds like a stereotyped bit of dialogue from a radio thriller, the question refers to a situation in the paper industry that is rapidly clearing up.

The papers that were hidden—because they couldn't be made—during the war years—are coming out into the open. And ARCC solutions and emulsions are speeding the process of getting better papers more quickly into the waiting markets.

New characteristics, new formulation possibilities, are developing from ARCC paper impregnants, coatings, adhesives.

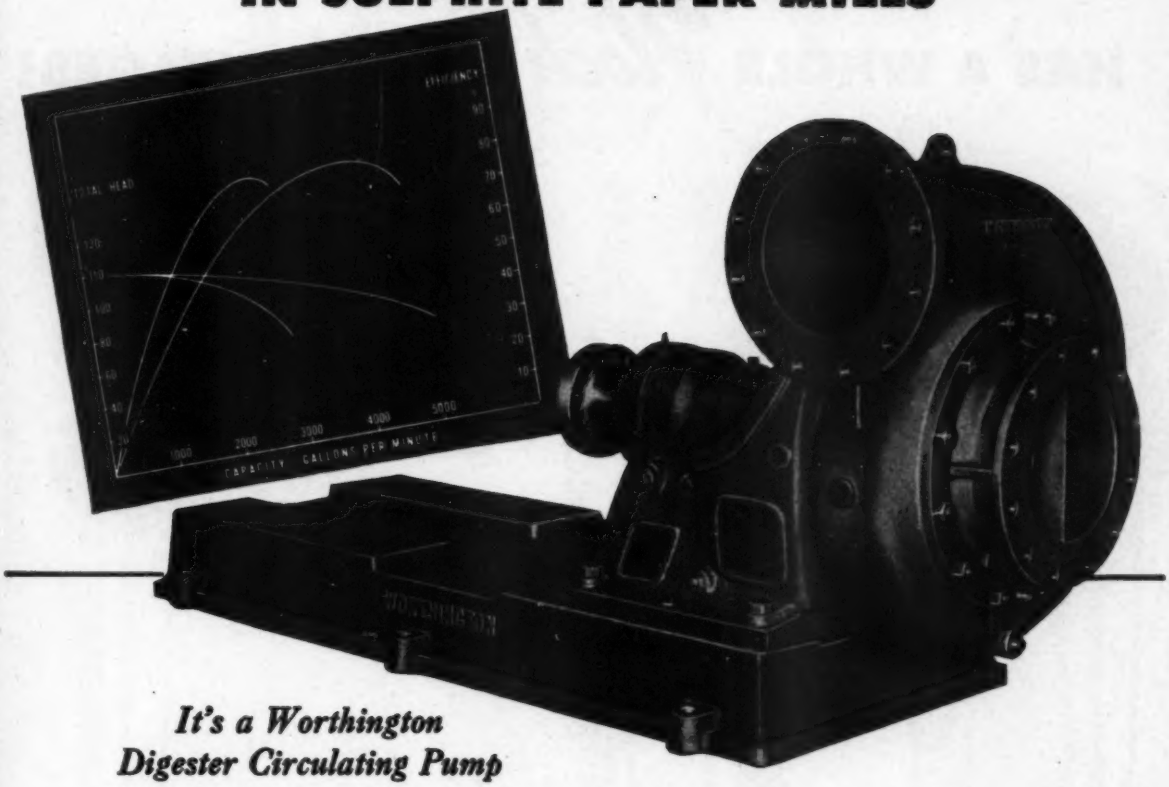
Greater strength; proof against grease and moisture; heat sealing . . . .

all these and more are at the finger tips of paper manufacturers, through resin emulsions and solutions specifically formulated for each purpose in producing better paper, and of characteristics superior to anything that has gone before.

American Resinous Chemicals Corp.

HOME OFFICES AND LABORATORIES: PEABODY, MASS.
NEWARK, N. J. CHICAGO, ILL. MONROVIA, CALIF.

HANDLING SULFUROUS ACID EFFICIENTLY IN SULPHITE PAPER MILLS



It's a Worthington Digester Circulating Pump

Corrosion-resistance is one yard stick for measuring the value of a pump for handling sulfurous acid. But *performance* is equally important.

You get *both* . . . maximum corrosion-resistance and peak performance . . . when you choose a Worthington Digester Circulating Pump. That's because Worthington engineers have the *unique* ability to design and manufacture stainless alloy pumps with the *hydraulic design* characteristic of pumps made of more easily-worked metals. The sample performance curve shown above tells its own story.

With more actual pumping experience . . . with the greatest research and manufacturing facilities in the field of hydraulics — it is natural that Worthington should lead in pump developments for paper manufacturing processes.

Whatever your process — Sulphite, Kraft or Soda — whatever your pumping problem, Worthington Pump Application Engineers have the knowledge and the line of pumps to put your process on a profitable basis.

For proof that *there's more worth in Worthington* . . . for a date with a Worthington P.A.E.* . . . write today. *Worthington Pump and Machinery Corporation, Harrison, New Jersey.* *Pump Application Engineer.

WORTHINGTON

24CS-1

THE WORLD'S LARGEST MANUFACTURER OF PUMPS

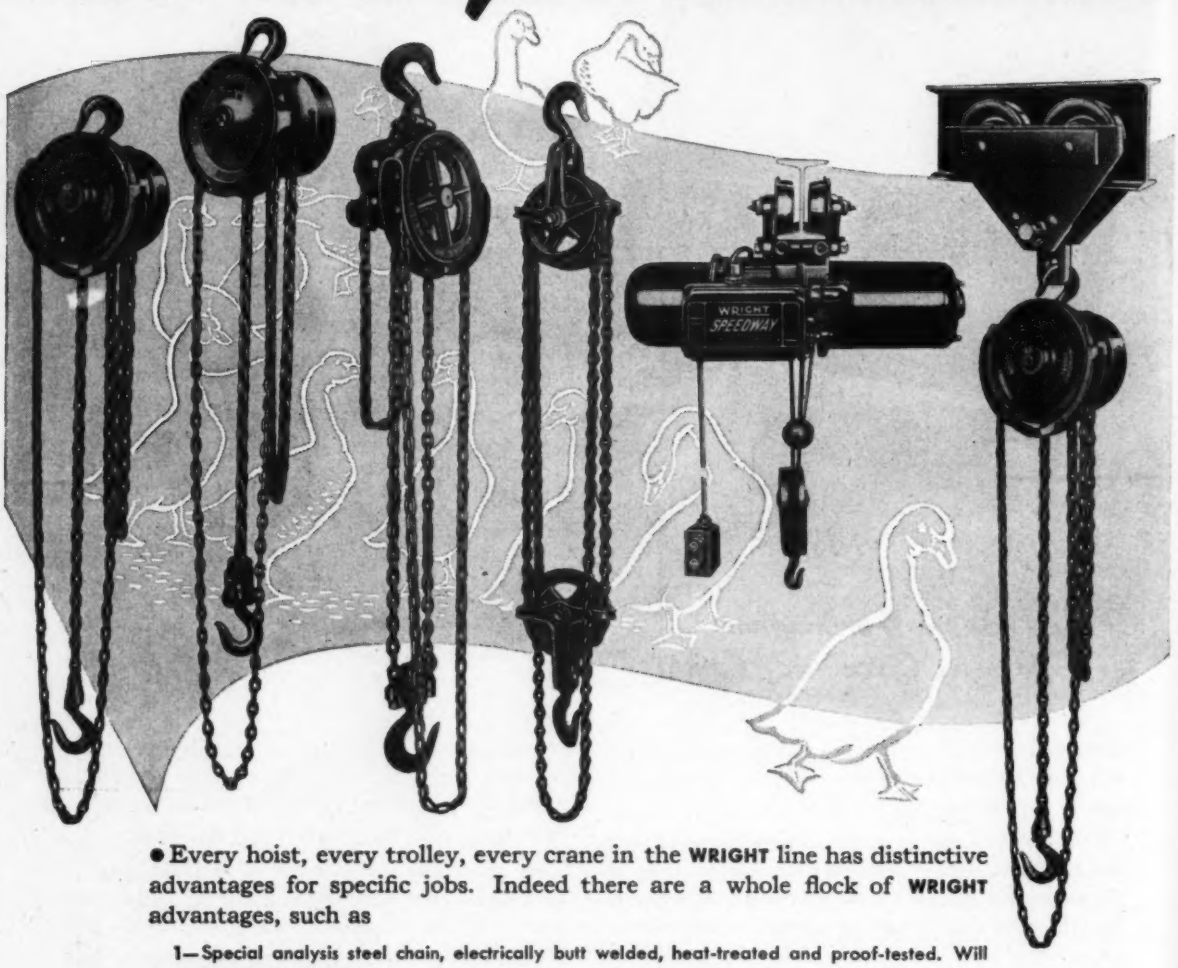
CENTRIFUGAL STOCK PUMPS Type FP. Handle all kinds of stock up to 6% consistency. 4 sizes. Capacities up to 3200 GPM. heads up to 160 ft. speeds up to 1750 RPM.

GENERAL PURPOSE PUMPS Type CF. Open impeller. Single stage. Sizes 1" to 4". Capacities up to 1000 GPM heads up to 130 ft. speeds up to 2475 RPM.

BOILER FEED PUMPS Type DB. 7 sizes. Capacities up to 1300 GPM. heads up to 1000 ft. speeds up to 3600 RPM.

THE WRIGHT LINE

HAS A WHOLE *Flock* OF ADVANTAGES!



● Every hoist, every trolley, every crane in the **WRIGHT** line has distinctive advantages for specific jobs. Indeed there are a whole flock of **WRIGHT** advantages, such as

1—Special analysis steel chain, electrically butt welded, heat-treated and proof-tested. Will not work harden.
2—Each link is gauged to fit pocket wheel. The chain is exceptionally high in tensile strength.
3—Non-fouling chain guide permits pulling of hand chain from any angle below hoist.
4—Planetary gear reduction of efficient and compact design.
5—Drop forged bottom hook from special analysis steel gives visible warning when overloaded through slowly opening without fracture, thus providing safe operation.
6—Precision ball bearings to increase efficiency and ease of operation.

Another **WRIGHT** advantage is engineering based on three principles: Safety, Efficiency and Economy. See your local **WRIGHT** distributor.

ACCO

York, Pa., Chicago, Denver, Los Angeles, San Francisco, Portland, New York, Bridgeport, Conn.

WRIGHT MANUFACTURING DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

You'll want this

FREE BOOK

56 PAGES FILLED WITH FACTS—DESIGN DETAILS—PAGE AFTER PAGE OF HELPFUL INFORMATION

What Cement to use for different corrosives

When to Use Impervious Membranes, and how

What membrane to use

Type of shell best suited for different membranes

How to build an acid-and-alkali proof floor

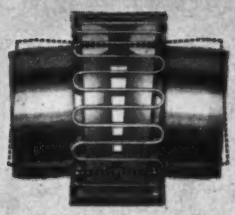
How to Repair Corrosion-Resistant Masonry

IT'S ABSOLUTELY FREE!

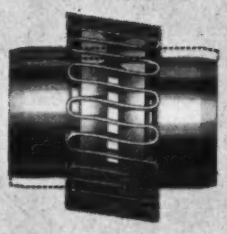
Write for your copy today!
Ask for Bulletin 810

U. S. STONEWARE

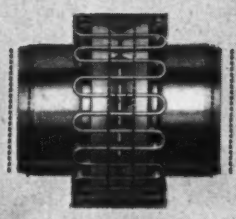
ALL THIS



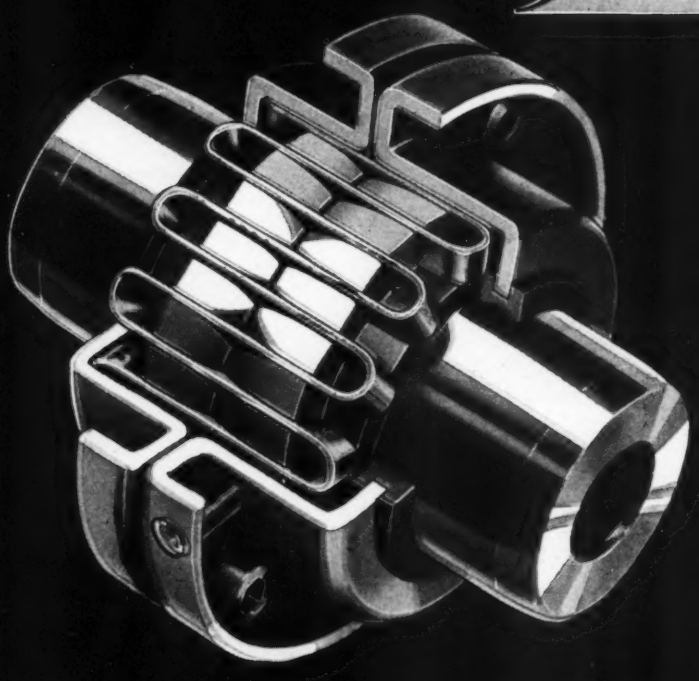
Angular Misalignment. Under angular misalignment the design of the Falk Steelflex coupling permits a rocking and sliding action of lubricated grid and hubs that allows the greatest freedom of accommodation to angular misalignment, while at the same time transmitting the power through the resilient grid with no lost motion or backlash.



Parallel Misalignment. When parallel misalignment is involved, the resilience of the grid-groove combination comes into full play. The movement of the grid in the lubricated grooves accommodates the misalignment, while still permitting full functioning of the grid-groove action of the coupling in absorbing shock and dampening vibration.



Free End Float. Because the grid member slides freely in the lubricated grooves, the Steelflex coupling permits free and independent end float for the shafts of both the driving and driven members, or of either one. If it is desired that end float be restricted, provision can be made to limit it to any required amount.



Why the Falk Grid-Groove Design Gives you a Plus Value Coupling

Many different kinds of couplings are available. Almost any of them will, to a degree, correct angular misalignment.

To probably a lesser degree, they will correct parallel misalignment, and, if provisions are intentionally made, they will permit a certain degree of end float. But it is the manner in which they provide for these corrections that determines their value to you.

Falk Steelflex Couplings do well-nigh perfectly all that a coupling should do and, in addition, they provide torsional resiliency in addition to flexibility. This is a definite plus value.

IT ALWAYS PAYS TO CONSULT FALK

...and TORSIONAL RESILIENCE, Too!

Because of the Grid-Groove Design of FALK STEELFLEX COUPLINGS

Here's How It Functions... Falk Steelflex Couplings are conspicuous because of their grid-groove design... The grid-groove design is the net result of long experience in gear design... This is important, because in most cases a coupling is used in conjunction with a driven machine involving the use of gears... The long experience of Falk engineers in designing gears has been responsible for coupling design which not only provides the flexibility long considered essential but also provides the torsional resilience which enables Falk Steelflex Couplings to transmit power smoothly, efficiently, with an almost total elimination of the effects of shock, to dampen vibration, and to cushion the load even under severe peak loads... Here is a very simple exposition of how the Falk grid-groove design imparts unusual performance:

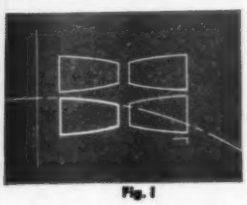


Fig. I

FIG. I. Grooves, in a precise arc, and with a radius and length proportional to the size of the coupling, are cut into two identical hubs of moderately high carbon steel—forged or Falk alloy cast steel... **FIG. II.** These grooves provide a snugly fitting slot for a grid member made of chrome alloy steel with an elastic limit of 180,000 pounds per square inch and an ultimate strength of 220,000 pounds per square inch... **FIG. III.** This grid fits snugly into the curved grooves cut into the hubs of the coupling. The grooves provide a scientifically cut bearing surface for the grid. This bearing surface extends from the outer to the inner edge of the hubs. The grid bears on the grooves in proportion to the load... **FIG. IV.** Under light loads, the grid bears only at the outer edges of the grooves. This permits a long, free, elastic span between the outer edges of both hubs. Power is transmitted through almost the entire length of the grid rung... **FIG. V.** Under normal loads, the grid bears on a larger area of the grooves and the span of the grid rung is automatically shortened as the load increases. It transmits more power without increasing internal stress and maintains its capacity to absorb shocks, dampen vibration and cushion the load... **FIG. VI.** Under peak loads, the grid rungs bear over almost all of the curve surfaces of the grooves. The span of the grid rung becomes very short. The coupling still remains torsionally resilient. Under the impact of shock loads the grid flexes and continues to transmit power smoothly and efficiently.

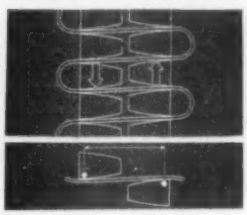


Fig. IV

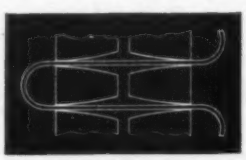


Fig. II

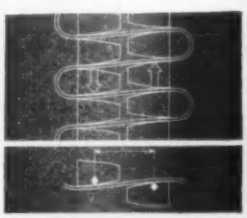


Fig. V

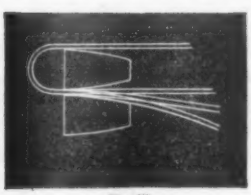


Fig. III

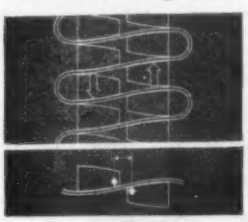


Fig. VI

There are 13 types and 33 sizes of Falk couplings to meet all requirements. (Get the more detailed information, including Torque Deflection and Stiffness Factor Curves, which is available to you upon request). For specific information and recommendation to meet your needs, call the nearest Falk representative or distributor.

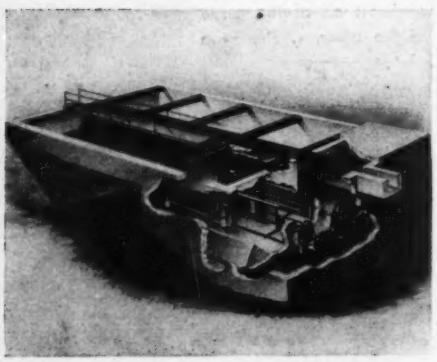
THE FALK CORPORATION, MILWAUKEE 8, WISCONSIN

For over fifty years precision manufacturers of Speed Reducers... Motoreducers... Flexible Couplings... Herringbone and Single Helical Gears... Heavy Gear Drives... Marine Turbine and Diesel Gear Drives and Clutches... Contract Welding and Machine Work. • District Offices, Representatives, or Distributors in principal cities.

FALK... A GOOD NAME IN INDUSTRY

In the dark about what to do with white water?

How Permutit* conditions water for use and re-use ...helps save filler and chemicals



ONE OF THE WAYS in which Permutit helps the paper mill to control water quality is this White Water Reclaimer for the recovery of fibre and filler from waste water, permitting re-use of the water.

RECOVERY of white water is no problem for paper mills equipped with Permutit's White Water Reclaimer. This equipment recovers a high percentage of fibre and filler, reducing stream pollution, and permitting re-use of pulp water.

This is just one of the ways in which Permutit serves the pulp and paper industry. Other Permutit Water Conditioning equipment recovers chemicals from regular waste water, and removes the impurities from incoming process water.

Whatever your water problem, bring it to Water Conditioning headquarters. Plan today, with Permutit, to control the quality of the water you use . . . to improve your mill's standing in the industry, and in the community, tomorrow. Write The Permutit Company, Dept. **I-5,** 330 West 42nd Street, New York 18, N. Y. or Permutit Co. of Canada, Ltd., Montreal.

*Trademark Reg. U. S. Pat. Off.

PERMUTIT

WATER CONDITIONING

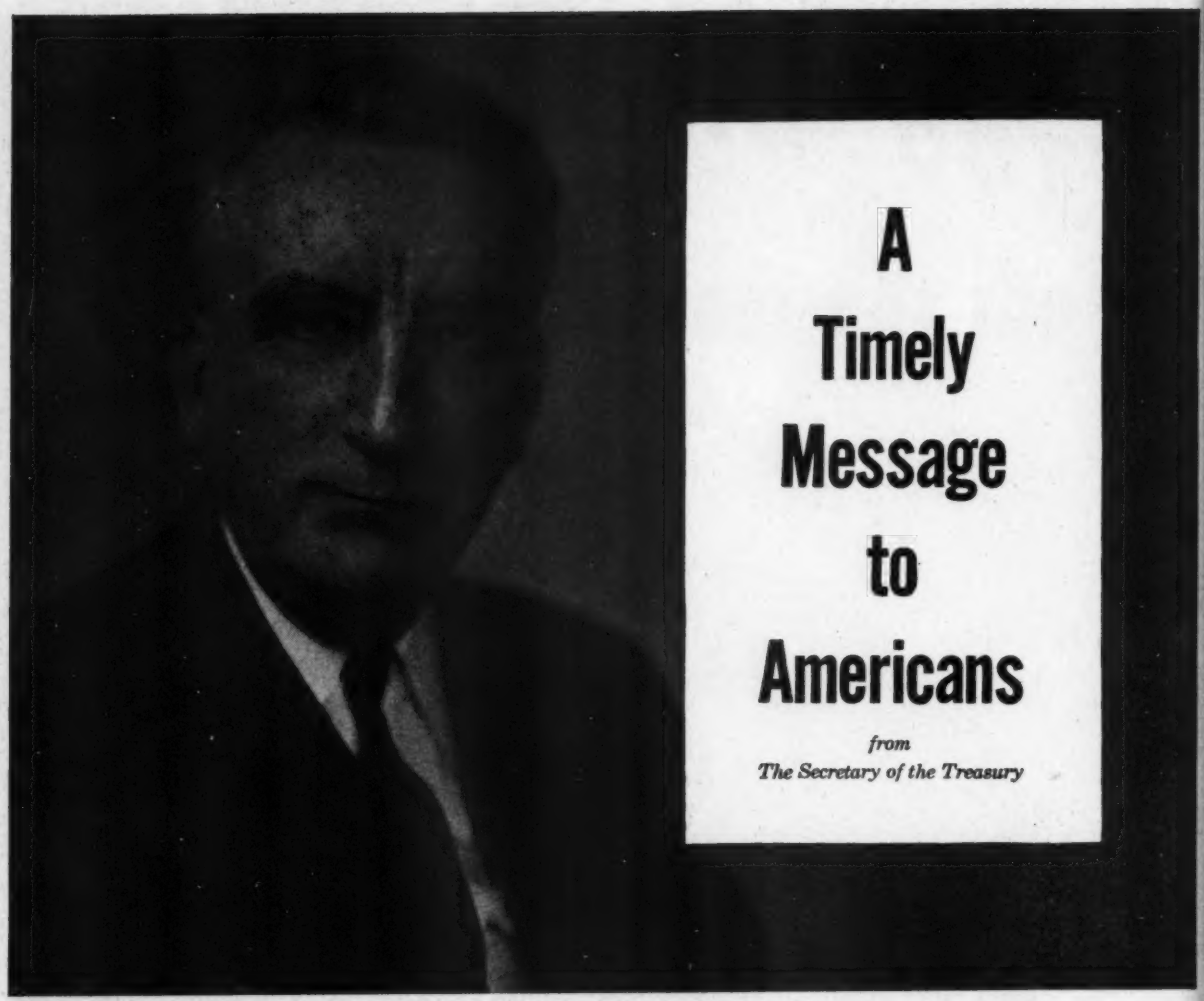
This asphalt melting unit called for a coil that could really take it: Intricate fabrication of hundreds of pipes and welded joints that must stay steam-tight at 500° F—even when battered by a crushing load of thousands of pounds.

Flori has the skill, equipment and experience to meet such unusual specifications. The tougher your job—the better we like it.

FLORI FABRICATION

IF IT'S FABRICATION...CONTACT FLORI

THE FLORI PIPE COMPANY • ST. LOUIS 15 • CHICAGO 47



A Timely Message to Americans

from
The Secretary of the Treasury

America has much to be thankful for.

Abroad we have overcome enemies whose strength not long ago sent a shudder of fear throughout the world.

At home we have checked an enemy that would have impaired our economy and our American way of life. That enemy was inflation—runaway prices.

The credit for this achievement, like the credit for military victory, belongs to the people.

You—the individual American citizen—have kept our economy strong in the face of the greatest inflationary threat this nation ever faced.

You did it by simple, everyday acts of good citizenship.

You put, on the average, nearly one-fourth of your income into War Bonds and other savings. The 85,000,000 owners of War Bonds not only helped pay the costs of war, but also contributed greatly to a stable, prosperous postwar nation.

You, the individual American citizen, also helped by cooperation with rationing, price and wage controls, by exercising restraint in your buying and by accepting high wartime taxes.

All those things relieved the pressure on prices.

THE TASK AHEAD

We now set our faces toward this future: a prosperous, stable postwar America—an America with jobs and an opportunity for all.

To achieve this we must steer a firm course between an inflationary price rise such as followed World War I and a deflation that might mean prolonged unemployment. Prices rose more sharply after the last war than they did during the conflict and paved the way for the depression that followed—a depression which meant unemployment, business failures and farm foreclosures for many.

Today *you* can help steer our course toward a prosperous America:

—by buying all the Victory Bonds you can afford *and by holding on to the War Bonds you now have*

—by cooperating with such price, rationing and other controls as may be necessary for a while longer

—by continuing to exercise patience and good sense with high faith in our future.

The challenge to America of switching from war to peace with a minimum of clashing gears is a big one.

But it is a small one compared to the tasks this nation has accomplished since Sunday, December 7, 1941.

Fred M. Vinson
Secretary of the Treasury

A Government message prepared by the War Advertising Council and contributed by this magazine in cooperation with the Magazine Publishers of America

FOR YEAR ROUND SATISFACTION

IN YOUR LIQUID CHLORINE PURCHASES,

SELECT THE RIGHT BRAND AND A DEPENDABLE SOURCE OF SUPPLY . . . THEN STANDARDIZE.

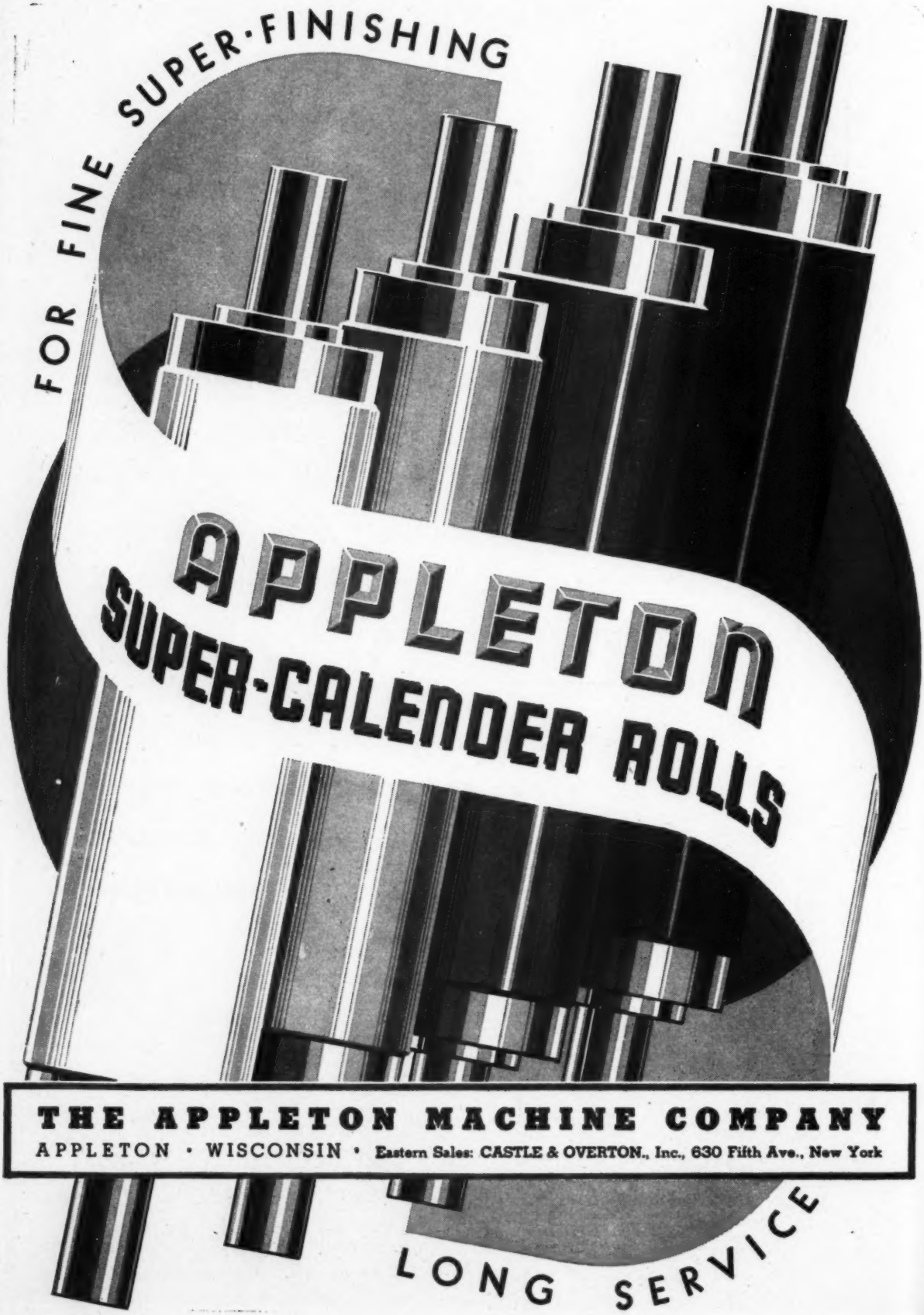
IT'S THE PROFITABLE WAY TO BE CERTAIN OF LIQUID CHLORINE UNIFORMITY AND DEPENDABILITY.

A NUMBER OF LEADING PAPER AND PULP MANUFACTURERS HAVE SATISFACTORILY STANDARDIZED ON DIAMOND LIQUID CHLORINE,—ALWAYS A TOP QUALITY PRODUCT FOR PAPER PROCESSING OPERATIONS.

DIAMOND ALKALI CO.

PITTSBURGH, PA. AND EVERYWHERE

CHLORINE



THE APPLETON MACHINE COMPANY

APPLETON • WISCONSIN • Eastern Sales: CASTLE & OVERTON., Inc., 630 Fifth Ave., New York

MECHANIZED *Flow* OF MATERIALS

AUTOMATIC TRANSPORTER
MOTORIZED HAND TRUCK

AUTOMATIC FORK TRUCK

Gives you

LOWER UNIT COSTS . . .

Management is now *compelled by competition* to utilize men, methods, materials and machines in a manner *to achieve lowest production cost and sales price per unit.*

While processing motions usually add value to a product, *handling motions add only to its cost.*

You can lower your unit costs if you will team up AUTOMATIC's battery-powered Fork Truck with the war-tested "TRANSPORTER," AUTOMATIC's *service-proved,* motorized hand truck,—and apply AUTOMATIC's Engineered Materials Handling Methods.

AUTOMATIC's completely Engineered Materials Handling Service will do these things for you:

1. *Eliminate* costly manual handling.
2. *Reduce damage* to materials handled.
3. *Increase storage capacity* by safe, vertical stacking of materials to rooftop.
4. *Simplify inventory* control.
5. *Increase productivity* by reducing labor fatigue.
6. *Reduce accidents.*

Please write us now so we may schedule your plant for the next AUTOMATIC Engineered Materials Handling survey in your area.

At Your Service

AUTOMATIC has 100 Materials Handling Engineers in the field. There's one near *your* plant. He is ready to help you analyze your operations from receipt of raw materials through each successive handling procedure to storage and final shipment.

***Please write us now* so we may schedule your plant for the next AUTOMATIC Engineered Materials Handling survey in your area.**

MANUFACTURERS OF *Electric* INDUSTRIAL TRUCKS SINCE 1906

AUTOMATIC TRANSPORTATION COMPANY

Division of the Yale & Towne Manufacturing Company

113 West 87th Street Chicago 20, Ill. U. S. A.

Specialists in developing ENGINEERED MATERIALS HANDLING TO LOWER UNIT COSTS

G-E diesel-electric cuts switching costs

This 65-ton G-E diesel-electric at Port Edwards, Wisconsin has had a 98 per-cent average availability for the last four years

diesel-electric
INDUSTRIAL
LOCOMOTIVES

WHY IT PAYS TO USE G-E DIESEL-ELECTRICS

Availability—90 Per Cent Up!
The diesel-electric carries sufficient fuel for several days' operation, runs for long intervals between overhauls, and requires only periodic inspections.

Always Ready to Go
The diesel-electric starts on the press of a button. No unproductive labor time is required to get locomotives ready for work.

Fuel Costs Low
The diesel-electric's high efficiency allows it to operate on a fuel cost that is only a fraction of that of a steam locomotive. Moreover, you don't have to keep the engine running to "keep up steam."

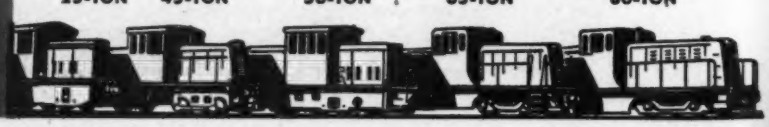
One-man Operation
The diesel-electric needs only a one-man crew, as against two usually required on a steam locomotive.

Maintenance Simplified
The diesel-electric has no boiler, firebox, nor heavy reciprocating parts, thus greatly simplifying maintenance.

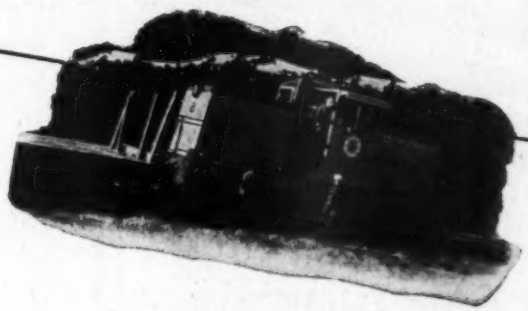
Fire Hazards Reduced
The diesel-electric gives off no smoke nor harmful exhaust gas and so is ideal for use around or in buildings. When it replaces a steam locomotive, it lessens fire hazards and building maintenance.

Track Maintenance Cut
The diesel-electric is easy on the track because of the smooth, even torque at the wheel rim. Moreover, the diesel-electric's short rigid wheelbase negotiates curves without rail climbing or rail spreading.

25-TON 45-TON 50-TON 65-TON 80-TON



at large paper mill in half



Four years ago the Nekoosa-Edwards Paper Company replaced a steam locomotive at its mill at Port Edwards with a 65-ton G-E diesel-electric. Large savings have resulted. The total operating and maintenance expense of the diesel-electric is less than half that of the steamer it replaced. Based on the advantages obtained with this 65-tonner, the Company plans to put another diesel-electric in service to replace a steam switcher which operates at the Nekoosa, Wis. Kraft plant, four miles away.

The diesel-electric handles all of the switching at the Alexander Mill. It moves carloads of logs from the railroad siding to storage piles. From there, trains of ten 60-ton carloads are hauled to the mill, up a grade of .6 per cent for some 2000 feet, with a curve at the upper end. This locomotive also handles outgoing shipments and all transfers between the Port Edwards and the Nekoosa plant. In its four years of service it has had a 98 per cent availability average.

The mill manager of the Nekoosa-Edwards Paper Company, states: "We are as enthusiastic now about the G-E diesel-electric as when we bought it four years ago. Not only does it do more work, in less time, at half the cost of the steamer's operation, but it eliminates the cinder and smoke nuisance throughout the plant. This is particularly important alongside our finishing room, where the paper must be kept clean."

Write for full information on our complete line of diesel-electrics, which are built from the rails up by General Electric.

General Electric Company, Schenectady 5, N. Y.

Buy all the BONDS you can—
and *keep all you buy*

GENERAL ELECTRIC

120-10

If it's important that you change machine speeds at one or more remote stations, Lewellen makes it possible

The value of a Lewellen *Variable-Speed* Transmission may be enhanced by the addition of—

LEWELLEN REMOTE CONTROL

★ Think of convenient push-button stations where infinitely-variable speed adjustments may be made simply, quickly. Time is saved—operators may devote their undivided attention to the job at hand and make desired speed changes without leaving their positions. Electrical tachometers may be installed so that operators may know the exact speed their Lewellen-controlled units are running. *This is speed control at its best!*

When you look to Lewellen for the solution of your speed-control problems, you employ specialists—it has been speed control—lock, stock and barrel—with Lewellen for more than 45 years.

★ *Variable-Speed Transmissions*
★ *Variable-Speed Motor Pulleys*
★ *Remote Controls*
★ *Automatic Electrical Controls*

LEWELLEN MANUFACTURING CO.
COLUMBUS, INDIANA

Easier, More Accurate FLOW READINGS!

6" dial
13" scale

Inexpensive as glass manometer... yet safer, surer, more durable

It costs no more to get the permanent, positive guidance of a Foxboro Dial Flow Meter than to install a high grade glass manometer. Yet operators gain new ease and accuracy in checking operating conditions.

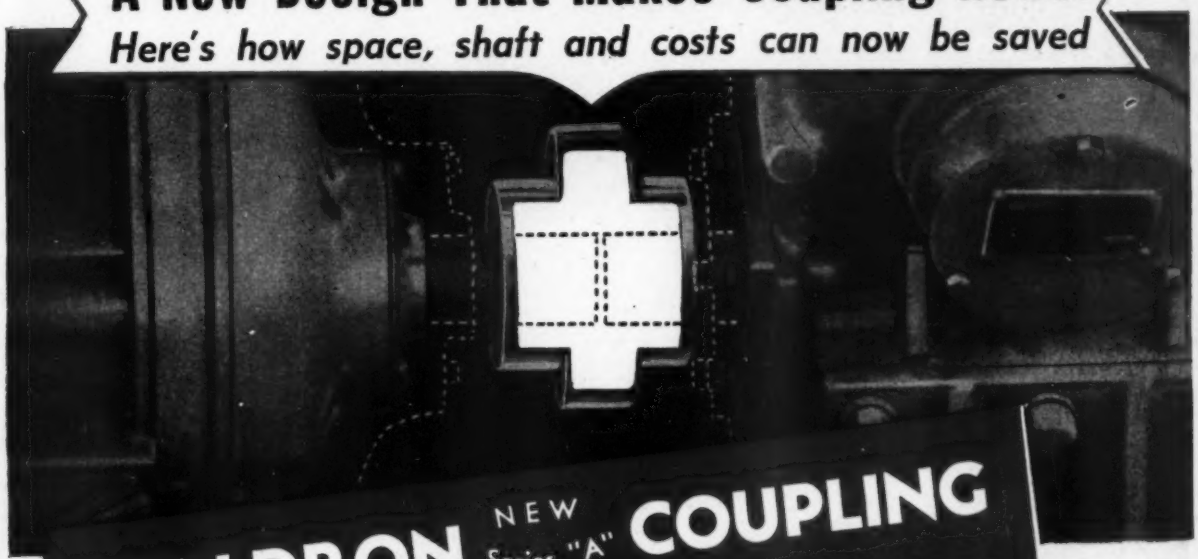
Foxboro Dial Flow Meters are engineered like finest recorders or controllers. Friction and lost motion are eliminated from the movement. Rugged all-metal construction insures safety up to 400 lbs. per sq. in. (up to 1,000 lbs., if specified). Clear-cut dial markings are readable at 30 ft.... and dirty liquids can't blur readings!

Write for full details of Foxboro Dial Flow Meters and similar Foxboro Liquid Level Indicators. **The Foxboro Company, 158 Neponset Avenue, Foxboro, Mass., U. S. A.**

FOXBORO
REG. U. S. PAT. OFF.
DIAL FLOW METERS

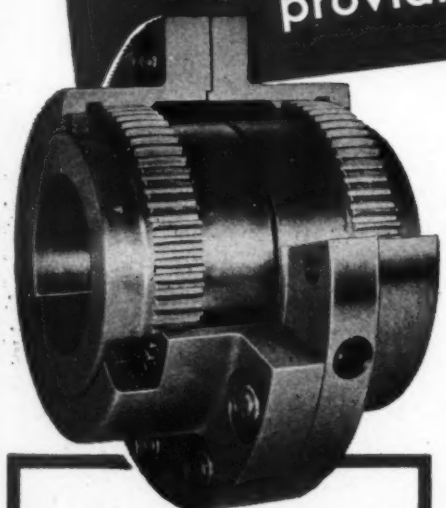
A New Design That Makes Coupling News!

Here's how space, shaft and costs can now be saved



WALDRON NEW Series "A" COUPLING

permits use of smaller sizes by providing larger maximum bore



Made in Standard, Mill Motor, Heavy Duty, Floating Shaft, Cut-Out, Shear Pin, Spacer Sleeve, Jordan, Vertical Floating Shaft and Rigid Types.

Waldron leads again . . . with a new design development that means greater accuracy and economies for coupling users. The new "Series A" Waldron Gear Type Coupling is designed to reduce size of coupling required for the particular shaft, reduce shaft extension for greater accuracy in operation, save space—and money.

It embodies all the famous Waldron design refinements: all forged steel, made to close manufacturing tolerances with positive dust proof and oil tight seal. Identical externally geared hubs key to shafts, enclosed by two piece cover sleeve that functions as a single rigid unit.

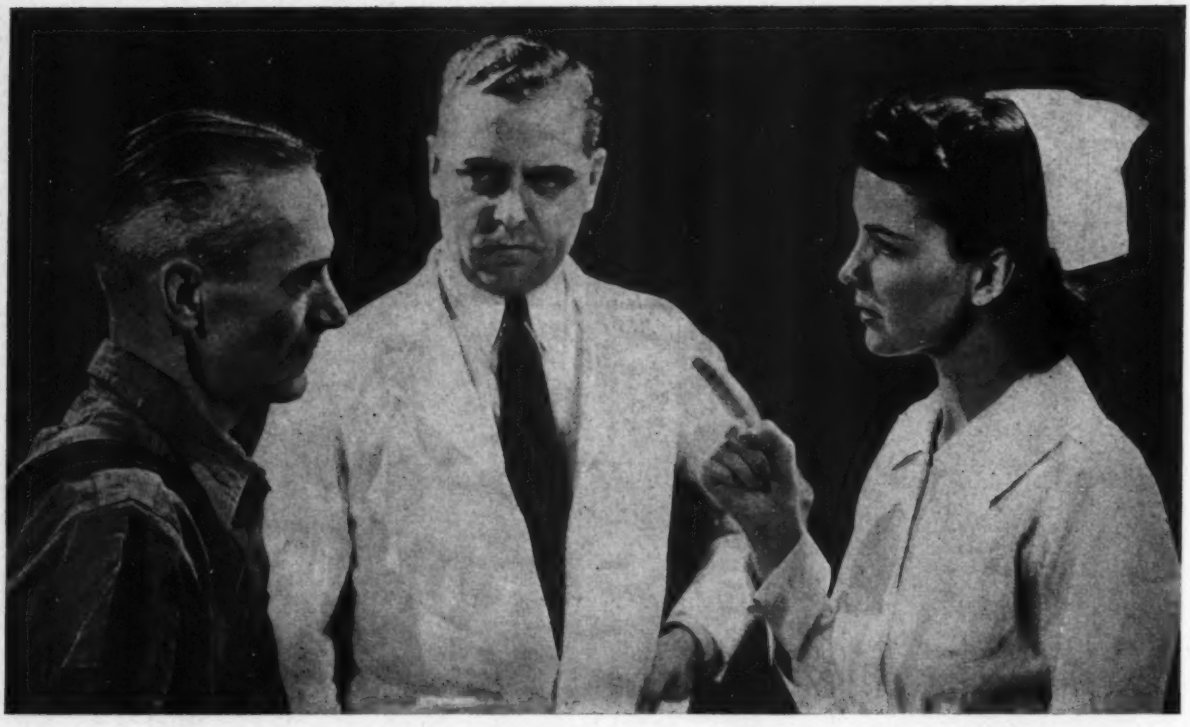
Ask us to send you specific advanced information on this new "Series A" Waldron Coupling that will easily prove most accurate and economical to buy and use.

(COUPLING DIVISION)

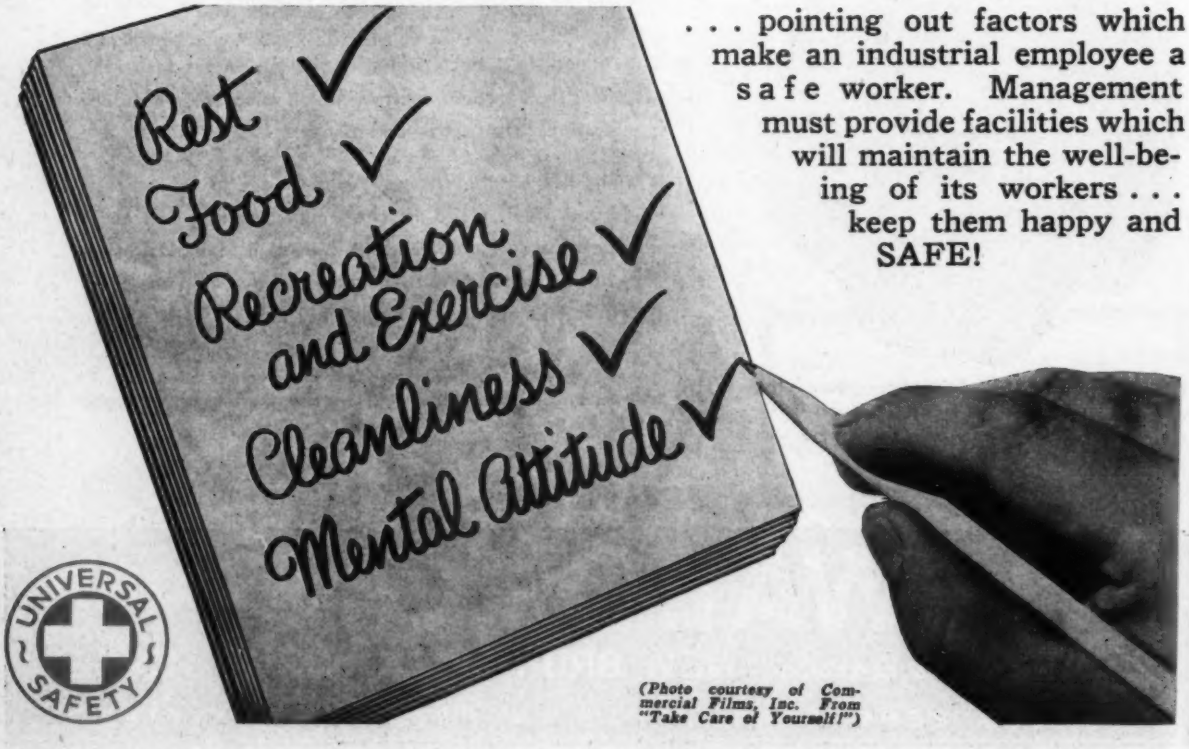
JOHN WALDRON CORP.

Main Office & Works – NEW BRUNSWICK, NEW JERSEY

SALES REPRESENTATIVES IN PRINCIPAL CITIES



"The Moving Finger Writes"



. . . pointing out factors which make an industrial employee a safe worker. Management must provide facilities which will maintain the well-being of its workers . . . keep them happy and SAFE!

UNIVERSAL SAFETY

(Photo courtesy of Commercial Films, Inc. From "Take Care of Yourself!")

TRADE WINDS

K-C Wadding Mill in Canada Is now in Full Operation

IN JUNE of this year, the new crepe wadding mill of the Kimberly-Clark Corporation of Canada Limited made its first run. Besides adding another operating mill to the industry, the Kimberly-Clark Corporation made its manufacturing "debut" on Canadian soil.

This plant has a 30-ton daily capacity; it is equipped to bleach and chemically treat pulp and to produce crepe wadding in a continuous process. Conversion of the product (Kleenex) will be performed by the Canadian Cellucotton Products Company, Limited, at Niagara Falls, Ontario. The plant has just been under construction since the spring of 1944, and because of the strenuous wartime period it was a real achievement for those who planned and directed the work, as well as the contractors who engineered its construction.

The exterior walls of the building are of solid reinforced concrete. Due to the extreme low outside temperatures and high humidity in the machine room, the building was made windowless with all glass omitted to prevent excessive condensation.

Heating and Ventilating

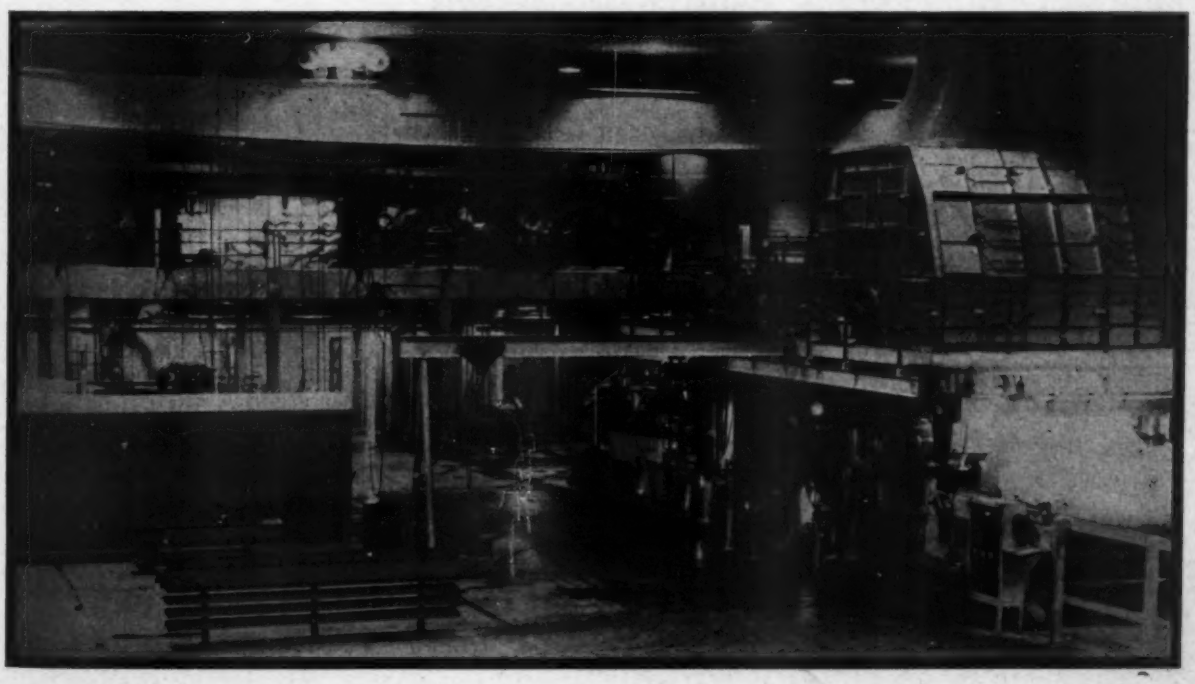
The heating and ventilating system for this windowless building is arranged to take in enough outside air in the winter to replace the air exhausted through the machine hood system and the attic process exhaust systems. The two-machine room ventilating units draw the preheated air from the adjoining train shed and wash it. This air then passes through reheating coils controlled by thermostats in the machine room to ducts which supply the air along the machine room walls and over the mezzanine floor.

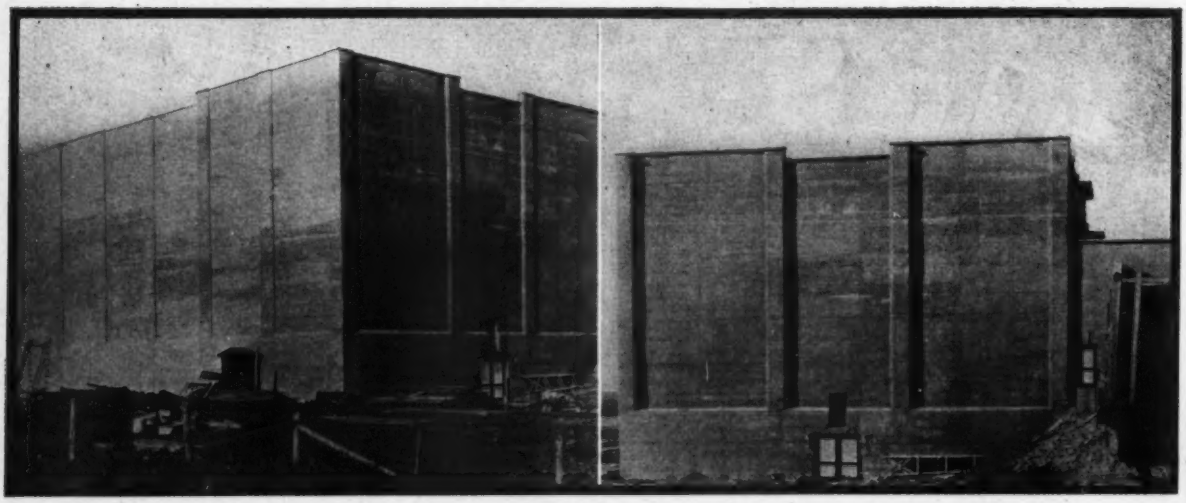
In the summer, controls are provided permitting the machine room ventilating systems to take in 100 per cent outside air. Exhaust fans are installed in the attic, drawing from grilles in the ceiling over the dryer section of the machines to remove the hot air at this point.

Machine Room

In the machine room, one crepe wadding machine already is in operation; eventually, another machine will be installed. The mezzanine floor at the wet end of the machine room is used for stock bleaching and washing. The

Below is shown the machine room of the new K-C crepe wadding mill. One machine is now in operation; another will be added eventually





Two views of new Kimberly-Clark plant which is attached to original Kapuskasing (Canada) mill

lighting for the machine room is supplied by flush lighting units, serviced from the attic.

All interior columns in the machine room are eliminated by the use of steel trusses extending from wall to wall. The finished inside face of all walls is lined with ceramic glazed tile from floor to ceiling. The latter consists of a perforated Transite acoustical material suspended from the attic floor steel decking, while the aisle between the two machines is a non-slip floor brick laid over a concrete slab.

Personnel

The new plant is manned by a staff of well trained, executives and production men. The parent K-C organization has transferred some of its men with special experience, and a number of key men from the adjacent Spruce Falls Power and Paper Company, Limited, (an affiliate K-C company) have contributed immeasurably to the project. When the mill was started, W. H. Swanson, superintendent of pulp manufacture, Forrest Werling of headquarters' operating organization, Horace DuBois, Rudolph Moravek and several others of the engineering and operating staff, all of the parent organization, went to Kapuskasing for the first operation.

E. S. Noble is vice president of the Canadian subsidiary; W. F. Cook, formerly of the parent organization, is mill manager; John Huppler is production superintendent assisted by John Truscott. Key operators include Bill Boyd, Harper McClintock, Harold Hansen, Duane Ferguson, Charles Kilshek, and William Jorgenson. C C. Farmer is office manager.

KIMBERLY-CLARK ANNOUNCES EXPANSION AT QUINNESEC

A northern Wisconsin paper expansion program unparalleled in a quarter-century has been launched at the Quinnesec mill of the Kimberly-Clark Corporation at Niagara, Wisconsin. In a move announced October 15 by Cola G. Parker, president, it was revealed that the expansion and modernization program at this northern-most of K-C's Wisconsin Mills will involve an expenditure upward of $5,000,000, when completed, and will represent a first step toward substantially increasing the corporation's book-paper production. This announcement represents the company's largest expansion in the book-paper field since 1920.

The expansion program plans are high-lighted by the erection of a new building. It will adjoin the present mill and ultimately stretch approximately 600 feet in length and of sufficient width to accommodate two high-speed fourdrinier machines, for the manufacture of machine-coated book-paper, and generally supply straight-line production; one machine is scheduled for immediate installation. The new facilities are expected to be completed in 1947.

Beside the new construction, a complete mill-modernization program will be carried out: New material handling facilities will be installed; existing machinery will be modernized; personnel facilities—such as locker-rooms, modern eating facilities—and temperature and humidity controls will be added. The finished program is intended to convert Quinnesec into a completely integrated mill, able to consume all of its own pulp.

Emphasized in company comments on the program is that the streamlining of facilities and equipment will provide greater job security and, additionally, assist the company in its overall aim to make permanent employment in the future exceed any previous peak.

"Over all, the program will strive for maximum quality and efficiency

Executives of the new K-C Kapuskasing plant shown here are: (L. to R.) C. C. Farmer, office manager; John Truscott, assistant production superintendent; John Huppler, production superintendent, and W. F. Cook, mill manager.

PAPER · · · America's 6th Industry

PAPER PLATES FOR FROZEN FOODS

(NEWS ITEM: *Individual dinners, frozen on paper plates, will soon be on sale in neighborhood grocery stores.*)

The housewife's dream of "no more cooking, no more dishwashing" may soon be realized. Individual dinners, quick-frozen on sturdy processed-paper plates, have been in military service until now. Before long they will appear in grocery stores. The dinner—plate and all—is heated for 15 minutes before serving.

Paper for shipping sacks . . . Paper for draperies . . . Paper for rug backing yarns . . . Paper for baking dishes . . . New uses for paper, calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines.

The Puseyjones Research and Development Committee, formed within this Organization to help in our service to America at War, now shares with the Paper Industry many of the lessons learned in the use of new materials and new techniques—and which are now so co-ordinated as to be of practical, workable value.

Our engineers are on call to survey your requirements.

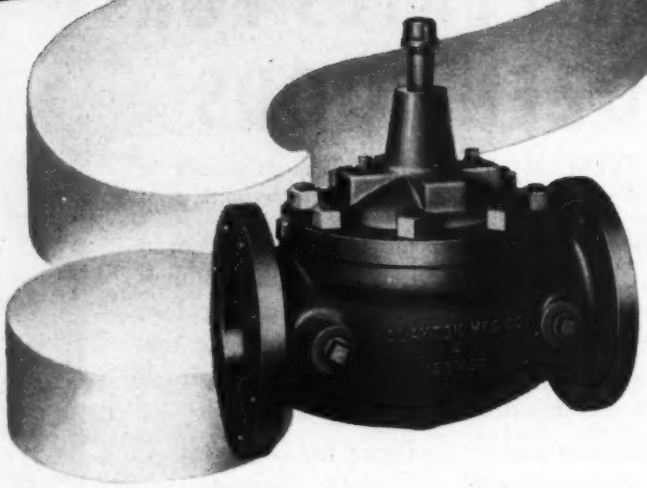
A New Bulletin—"The Improved Puseyjones Steam Joint" is now available. Also a descriptive pamphlet on the improved Stream Flow Vat System . . . Yours on request.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

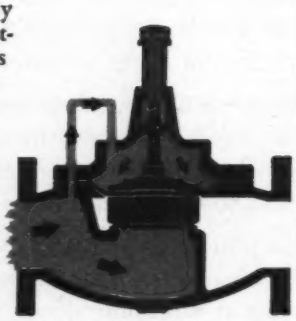
THE SIGN OF SUPERIOR QUALITY

Just what is a

CLAYTON VALVE?



CLAYTON Valves open and close by hydraulic forces. Through their exclusive, patented design and construction, tremendous forces are put to work by smooth, feather-touch pilot controls. The controls are operated manually, electrically, by float mechanisms, by adjustable counterbalance and by direction of flow in the line . . . the kind of control depending upon the type of Clayton Valve required. Single valves or groups of valves may be controlled individually, or in sequence or simultaneously. Where liquids, vapors or gases are carried in lines from ⅜" to 16" in size and under pressure to 300 psi, there is a Clayton Valve for the job.



THE CLAYTON LINE includes Remote Control Valves, Float Valves, Altitude Valves, Check Valves, Constant Discharge Pressure Valves, Pump Control Valves, Backflow Prevention Units.

Write for Engineering Data

CLAYTON VALVES

with FEATHER-TOUCH CONTROL

ALHAMBRA, CALIFORNIA

of personnel, product and mill," Mr. Parker said. "As our financial ability permits, we expect to add further streamlined equipment in other of our mills and, in this way, provide maximum earning opportunities for our people, plus the assurance mentioned above. A thorough survey of all of our facilities led us to the conclusion that Niagara, Wisconsin, was the logical place to begin."

An increase in community home building is expected as an aftermath of the new mill program.

The Quinnesec mill of Kimberly-Clark is located on the banks of the Menominee River, approximately eight miles from Iron Mountain. It is one of five mills owned and operated by the company in Wisconsin.

◆

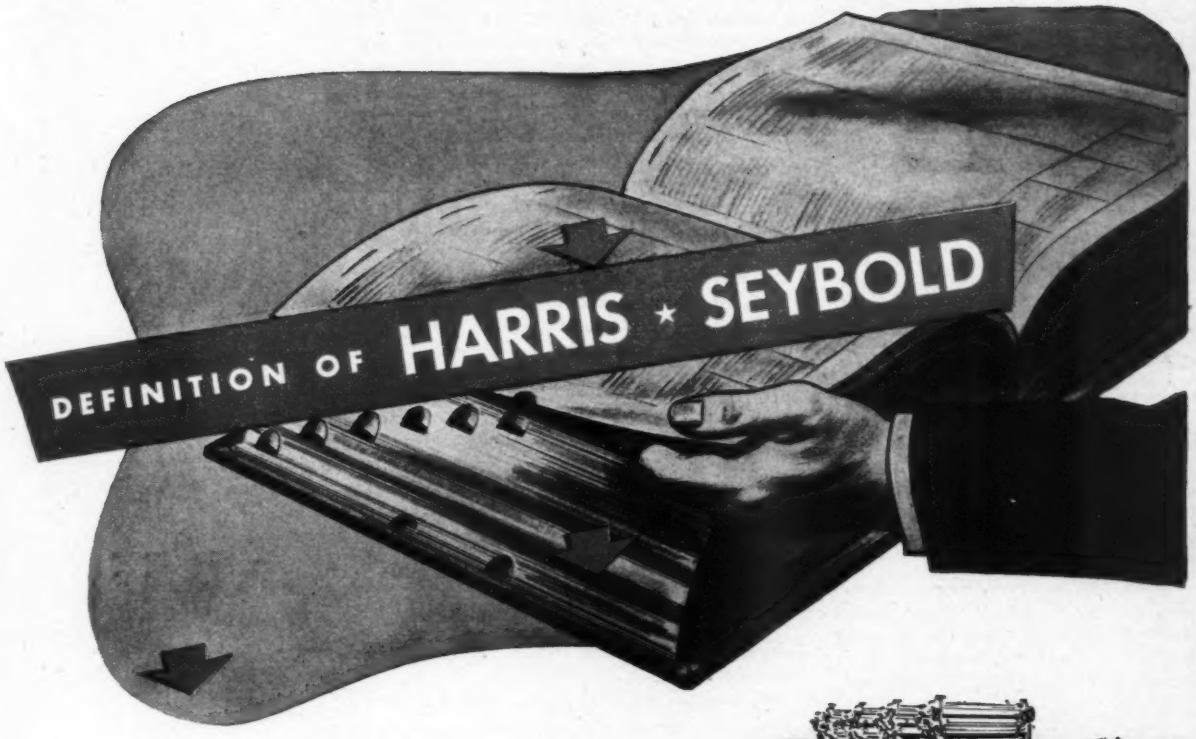
K-C PAPER MILL DIV. WILL CONCENTRATE ON BOOK PAPER —TO DROP SPECIALTY PAPERS

A change in policy, whereby Kimberly-Clark Corporation's Paper Division will increasingly concentrate on book paper, was announced November 17 by J. R. Kimberly, vice president in charge of sales, when he told that specialty papers were being dropped and announced simultaneously the establishment of a new district sales office in Atlanta, Georgia, as further indication of an accelerated book paper program.

In making the announcement, Mr. Kimberly commented that the fields of machine coated book papers and creped wadding products have always reflected the bulk of company effort and that demand for both has grown beyond essential manufacturing facilities; the company launched an accelerated production program last month with a $5,000,000 addition and modernization program at its Niagara, Wisconsin (Quinnesec), book paper mill.

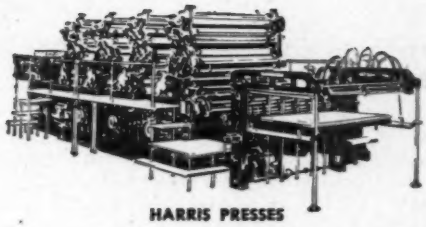
"The establishment of a new district sales office is one step in the direction of added service," Kimberly-Clark's vice president said, "and reflects—with the Niagara project and others under way—one main factor in our general program aimed at maximum support to our book paper distributors and customers in the expanding business days which they face." Preceding the Niagara development was the creation of a new technical laboratory at company headquarters in Neenah and, early this month, Kimberly-Clark arranged financing to the extent of $20,000,000, of which half was earmarked for further expansion.

George L. DuBois is the newly appointed district manager of paper

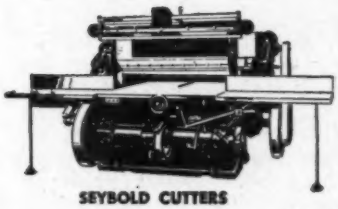


Harris-Seybold (Hâr-ĭs Sī′-bōld)n. [Cleveland, Harris; Dayton, Seybold]. Abbreviated form of the corporate name, Harris-Seybold-Potter Company, manufacturer of printing presses for fifty years, offset, typographic and gravure; power paper cutters and trimmers for sixty years. The company also manufactures paper, metal and wood stitching machines, and multiple spindle paper drills. Its lithographic offset presses range from one-color 17 x 22″ to four-color 50 x 69″.

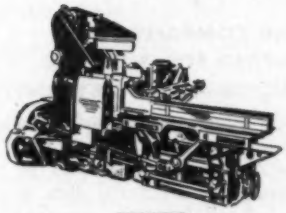
Harris-Seybold now has fourteen authorized factory service offices throughout the United States and Canada, manned by factory-trained personnel. A complete stock of replacement parts is maintained at New York, Chicago, Atlanta and Toronto, as well as at the factories. Harris-Seybold-Potter Company, General Sales Offices, Cleveland 5, Ohio.



HARRIS PRESSES



SEYBOLD CUTTERS



RELATED BINDERY EQUIPMENT

HARRIS ★ SEYBOLD

HARRIS PRESSES...SEYBOLD CUTTERS...RELATED MACHINES, EQUIPMENT AND SUPPLIES

sales in District III, heretofore served jointly by sales offices in Districts I and II; District III covers southern states plus Oklahoma, Texas, and New Mexico. Mr. DuBois is a veteran Kimberly-Clarker, starting with the company's manufacturing division in 1927 and moving from there into field sales and, more recently, acting as assistant to Lawrence Stedman, sales manager, Paper Division.

The new office is expected to open shortly after the first of the year.

◆

CONSOLIDATED PAPER CO. WILL ADD A MACHINE

Building operations will be started in the spring on an addition to the Monroe, Michigan, plant of the Consolidated Paper Company to house a 100 inch trim cylinder machine being purchased to be used in the manufacture of corrugating straw.

With this new machine in operation, in addition to the three cylinder machines already in use, the company will have an annual output of corrugating straw exceeding 56,000 tons.

◆

WESTON BECOMES PARTNER IN SIDNEY ROOFING & PAPER CO.

It was announced recently that W. Garfield Weston, Canadian capitalist, has become a partner in the business of the Sidney Roofing and Paper Company, Ltd., of Vancouver and Victoria, B. C., and also that the $250,000 expansion program of the company at its Victoria plant will be continued.

Mr. Weston also has an extensive interest in the National Paper Box Company (a subsidiary of Sidney Roofing) which is expected will cater especially to the box needs of the wholesale grocery, confectionery, biscuit, and bakery plants which are Weston controlled.

◆

MONTANA COMPANY PLANS FINANCING FOR BUILDING PULPWOOD-PLYWOOD PLANT

The Idaho-Montana Pulp and Paper Company, of Missoula, Montana, was granted permission November 13 by the Montana state auditor's office in Helena to sell $600,000 in securities in Montana for the establishment of a new industry in that state.

The concern plans a complete capitalization of $3,500,000 for plant construction and operation in western Montana, according to Thomas Taylor of Missoula, who is conducting financial arrangements. Mr. Taylor states the first issue of securities (2,000 units of $300 each) will be sufficient to construct the first production unit—a sawmill and plywood plant, or a 200-ton groundwood mill—near Polson. It is planned to start construction next spring.

It is expected that the plant, when fully equipped and in operation, will have a daily capacity of 150 tons of pulp and 60,000 feet of lumber. Also a monthly capacity of 1,250,000 feet of plywood. More than 500 men will be employed.

A tract of land, 60 acres, on the Flathead River, at the outlet of Flathead Lake, has been purchased, and an option has been taken on land near Columbia Falls for another possible plant site, according to Mr. Taylor.

◆

FINANCIAL

With securities markets reaching high points above any registered in the past eight years, paper mill issues followed the general trend and were not notably affected by a weakening of prices following the extensive strike developments of the latter end of October.

American Writing Paper Corporation—Net profit for the first nine months of 1945 amounted to $108,017.39 as compared with $123,499.26 for the corresponding period of 1944.

The Celotex Corporation — Net profit for the nine months ending July 31 was $489,499 as compared with $294,569 for the similar 1944 period.

Champion Paper & Fibre Company—Net profit for sixteen weeks to August 19 was $527,044, as against $611,545 for the comparable period the previous year.

Container Corporation of America—Net profit for the nine months ended September 30 was $1,401,962 as compared with $1,648,044 for the similar 1944 period.

Robert Gair Company, Inc.—Net income for nine months ending September 30 was $532,823 as against $519,078 for the same period in 1944.

Hinde & Dauch Paper Company—Five thousand shares of cumulative convertible preferred stock have been called for redemption at $105 and accrued dividends.

Hummel-Ross Fibre Company—Net income for thirty-six weeks ending September 8 was $177,320 as against $216,292 in the comparable period a year ago.

International Paper Company—Net profit amounted to $1,810,405 for the three months and to $6,221,476 for the nine months ended September 30, 1945, as compared with $2,114,376 and $6,548,626, respectively, for the corresponding periods in 1944.

Masonite Corporation—Net income for the fiscal year ended August 31 was $1,474,632 as compared with $1,173,585 for the previous year.

St. Regis Paper Company—An issue of 3% debentures due in 1965 for $15,000,000 has been sold to a group of insurance companies on a basis to yield 2.9%.

Scott Paper Company—Nine months net earnings ended September 29 was $1,079,905 as compared with $973,226 for the same period in 1944.

Sutherland Paper Company—Nine months income ended September 30 was $368,709 as compared with $508,756 for the same period in 1944.

Union Bag & Paper Corporation—Negotiations have been closed with a banking group for a $10,000,000 term loan to be used for retirement of a present loan and for expansion of present plants.

New York Stock Exchange—Stocks

	Closing Prices Oct. 25	Sept. 25
A.P.W. Products ..	6¾	7½
Celotex	19	19⅛
Same Preferred..	21	21½
Certain-teed Prod..	14	15⅝
Same Preferred..	...	*110-114
Champion P&F Co.	43	42½
Same Preferred..	*109-111	...
Container Corp....	35¾	33¼
Cont. Diamond ...	14⅜	*13½-13¾
Crown Zellerbach..	27¼	25¾
Same Preferred..	107	103⅛
Dixie Vortex	37	*34¼-34¾
Same "A"	50	48
Robert Gair	7¾	7⅞
Same Preferred..	19⅛	18¼
Gaylord Container.	31	*28½-29
Same Preferred	*63½-66	*63-65
International Paper	38⅜	32⅞
Same Preferred..	111¼	101⅞
Kimberly Clark.	*54-54¼	53½
Mead Corp.	19½	*18⅛-18½
Same Preferred	*106-107	*106-108
National Container.	22¾	18¾
Paraffine Cos.	73	*70-73
Same Pref.	*107½-109	*107¾-109½
Rayonier Inc.	22½	21⅞
Same Preferred..	37¼	36⅛
Scott Paper	56	*53½-54
Same 4½% Pref.	111	111¾
Same 4% Pref...	111	114
Sutherland Paper .	40	*38-40
Union Bag & Paper	22½	21
U. S. Gypsum ...	103¼	102
Same Preferred	*192-200	*192-193
West Va. P&P Co.	35	32¾
Same Preferred..	112½	110⅛

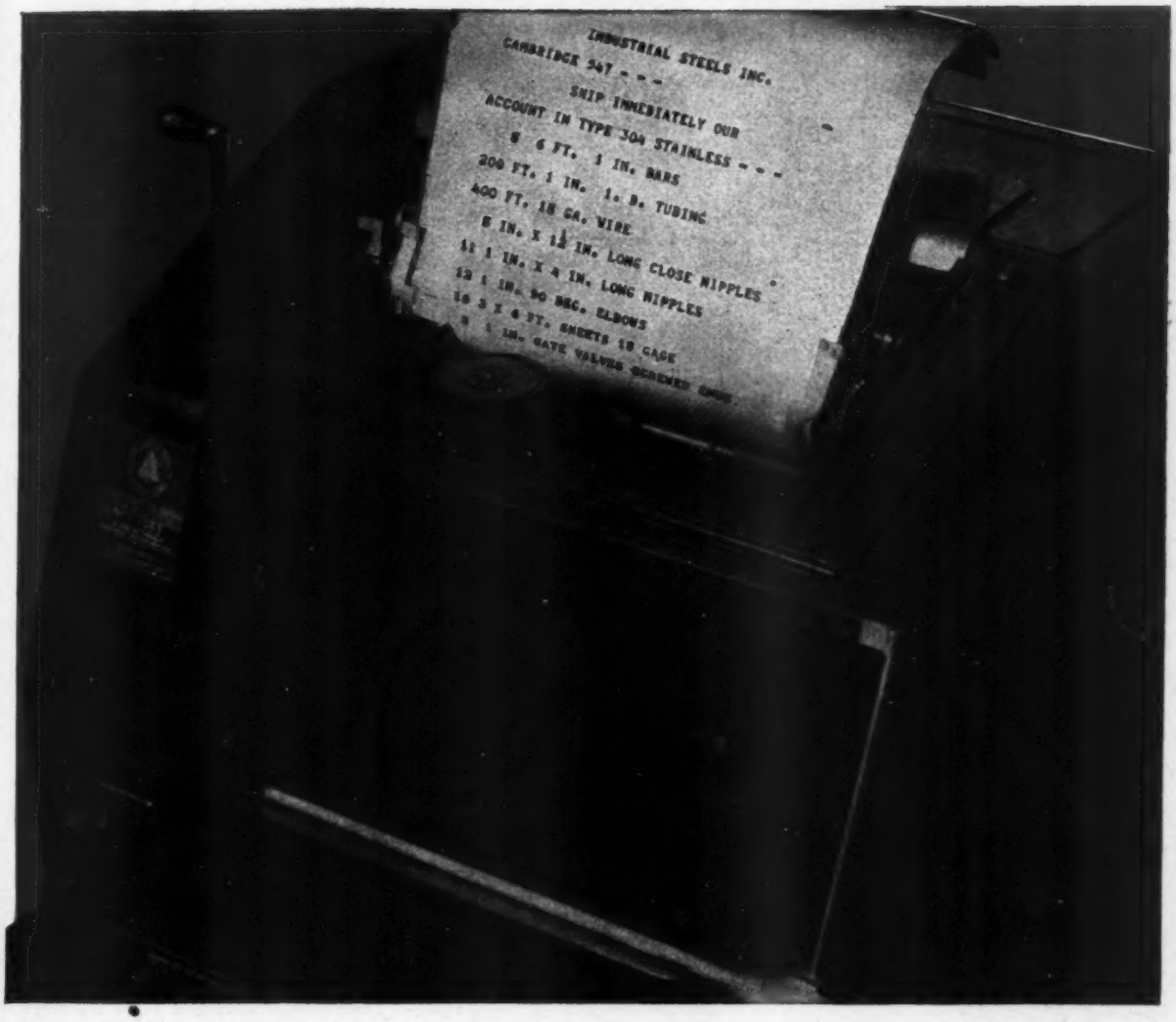
New York Stock Exchange—Bonds

Abitibi 5%	106⅞	...
Celotex 3¾%	...	...
Certain-teed 5½%		...
Cham. P&PCo. 3%	103⅛	...
Intl. Paper 5% ...	104	104
Same 6%	...	...

New York Curb Exchange—Stocks

Am. Writing	9⅜	...
Great Northern ...	44¾	38¾
Hummel Ross	10⅛	10⅜
St. Regis	9⅛	8
Taggart	...	7
United Wall Paper	7¾	7⅞

*Closing Bid and Asked Prices.


INDUSTRIAL STEELS INC.
CAMBRIDGE 547 - - -
SHIP IMMEDIATELY OUR
ACCOUNT IN TYPE 304 STAINLESS - - -
6 FT. 1 IN. BARS
200 FT. 1 IN. I. D. TUBING
400 FT. 18 GA. WIRE
8 IN. X 12 IN. LONG CLOSE NIPPLES
11 1 IN. X 4 IN. LONG NIPPLES
12 1 IN. 90 DEG. ELBOWS
10 3 X 4 FT. SHEETS 18 GAGE

THE fabricator of stainless steel equipment whose order you see coming off the teletype machine . . . like many other users of Stainless shapes and parts . . . has learned that all his orders for Stainless will be filled completely and promptly from the huge warehouse stocks of INDUSTRIAL STEELS, INC.

There is no price premium for this complete service, regardless of quantity.

Now it is not necessary to place orders for Stainless with a number of suppliers. You can save time and money in ordering . . . and can avoid delays in deliveries . . . by letting one order do it all.

Whenever you need ANYTHING in Stainless, get in touch with INDUSTRIAL STEELS first.

INDUSTRIAL STEELS, INC.

Everything in Stainless

277 BENT STREET • CAMBRIDGE 41, MASS.

TROWBRIDGE 7000 • TELETYPE: CAMBRIDGE 547

SHEETS • BARS • TUBING • WIRE • VALVES • WELDING
ELECTRODES • PUMPS • PIPE FITTINGS • HARDWARE

J1-MO-CI-K1

INDUSTRIAL STEELS, INC.
277 Bent St., Cambridge 41, Mass.

Gentlemen: Please put me on the list to receive your complete catalog on Stainless Steels.

Firm Name .....

Address .....

City ..... Zone No. ..... State .....

Your Name and Title .....

HAMMERMILL MODERNIZATION PLAN WILL COST $5,000,000

To supply the growing demand for Hammermill Paper Company products, and to support to the greatest possible extent its program for re-employment of war veterans, the Erie (Pennsylvania) paper mill will spend approximately $5,000,000 for installation of new equipment and improved processes.

In addition to Hammermill's expansion program, the company announces its current policy toward employment. The three major points are: first, a determination to re-employ all Hammermill men and women who have entered military service; second, a desire to retain all present employees; third, to provide as many additional jobs as possible.

The planned expansion of manufacturing facilities will require large amounts of steam and electricity. Thus, Hammermill intends to install two 150,000 pound high pressure boilers and a new turbine to produce power at the lowest cost. The power house addition was begun before the war started, but was halted when materials were needed for defense construction.

Ground has already been broken for a 600 by 295 feet warehouse for storage of finished products for loading and shipping by truck and rail. Plans for the new building are of the latest modern design, and equipment will be geared to most efficient handling.

Expansion plans include the installation of a new paper machine, larger and faster than any of Hammermill's six paper-making machines now in operation.

Action on financing the huge project will be taken at a special meeting of stockholders on December 10 in Erie.

◆

BRITAIN CUTS NEWSPRINT IMPORTS FROM NFLD. AND CANADA 75 PER CENT

A reduction of 75 per cent in 1946 imports of newsprint from Canada and Newfoundland has been announced by the British Government. However, it was stated by Sir Walter Layton, chairman of the Rationing Committee of the British Newspaper Publishers Association, that this decision will be reviewed again next April.

As the result of his recent conference in London with representative Canadian newsprint manufacturers, Sir Walter further states that 1946 imports will be limited to 50,000 tons of the 224,000 tons contracted for. It has been explained by R. C. Doane, vice president of Canadian International Paper Company, who was present at the conference, that although this reduction means a deferment for possible shipment in 1947 and 1948, it is not a cancellation. He said that Canadian mills will co-operate with the United Kingdom in its continued restriction of four-page newspapers as part of the present British austerity program, and added that the British Government has indicated "that, to carry out the new agreement . . . it will take steps to reduce its imports of Scandinavian pulp."

The new agreement modified the British Government's earlier decision to suspend entirely the newsprint ordered from Canada and Newfoundland for 1946.

◆

BRYANT PAPER CO. NOW MODERNIZING POWER PLANT—WORK TO COST $1,000,000

A million-dollar program of modernization that will make the power plant of the Bryant Paper Company, Kalamazoo, Michigan, a thoroughly up-to-date power and steam production unit is now under way. When completed, it will eliminate three big cross compound steam engines, will substitute unit drive for shaft power distribution, and will give maximum efficiency of both fuel consumption and heat recovery.

The old power plant, built in 1911, in which some of the original machinery of the rope drive type and the original boilers are still maintained as stand-by equipment, will be eliminated. A newer plant erected 22 years ago in which a 1,000-kw. generator is now in operation, will have two new pulverized coal burning boilers and a new 5,000-kw. generator added, with a new switchboard installed to handle the load.

The two boilers will operate at 625 pounds pressure and 750 Fahr. The new generator will operate 600 pounds pressure and will have two extraction stages at 150 pounds and 15 pounds. Steam not extracted for use in the mill, after passing through the turbines, will go to a new surface condenser, thus maintaining a perfect balance between demand for steam and power at all times.

Three new 300-hp. motors will go on three jordans in the Milham Division beater room, eliminating one steam engine with d-c generator; all of the Bryant beater room equipment will have individual motor drives, thus eliminating another steam engine, and the constant speed shafts on two Milham Division paper machines will be motorized, thus doing away with the third steam engine. The new power plant is being installed under the direct supervision of Merton S. Fogerty, superintendent of power and maintenance.

(*The Bryant Paper Company became a wholly-owned subsidiary of Time Incorporated, March* 1, 1945, *P. I. and P. W. March,* 1945, *p.* 1539.)

◆

BRITISH PAPER TRADE NOTES

The British Paper Trade like every other trade in this country is suffering from the snail's pace of demobilization, and, unfortunately, the system under which this is operating, while being as fair as possible to the serving man, appears to be resulting in the release of other than key men. Those who are not required immediately are returning only to find that their work is not ready owing to the fact that the materials of their trade have not yet been produced. Unless some revision to the scheme is forthcoming, unemployment will multiply rapidly.

Although the end of the Paper Control is not in sight, happily the loosening of this control is beginning to operate. Announcements have been made allowing increases in production of practically all classes of paper during the 20th license period which covers November to February next. At the same time, a considerable amount of licensing of small lots is being canceled in favor of a bulk comprehensive license to producers. Concurrently, there is an easing in the utilization of imported papers and a substantial increase of quota to paper merchants and the announcement that certain supplies of wrapping paper are reaching this country from Finland. Supplies of pulp from Sweden appear to be arriving fairly regularly.

From these several sources the increase of paper for civilian and export needs appears to be promising. It is hoped that the government will offer shortly a few relaxations in the restrictions on the minor uses of paper which are particularly irksome to both producers and consumers. It is no joke carrying home a new kettle, or a new teapot or even a pair of pants under the gaze and to the amusement of the general public.

Another serious matter to the papermaker at present is his inability to replace damaged machinery or to purchase new machinery to bring his plant up to date.

The makers of esparto papers, which form a section of the trade, are beginning to grumble. Under existing conditions they are forced to use straw in place of this grass which, in normal times, is imported from Africa. The chief disadvantages in the use of straw are its slow running and a

lower yield than esparto grass. Consequently, it consumes more coal and the resultant papers are below the grass paper standards. It appears to be a shortsighted policy on the part of the government to force papermakers to consume more coal, which is in short supply, thus increasing the price of the finished paper; to reduce the quantity of the paper which could be produced when paper is so badly needed and eventually produce a paper which in the ordinary way has a high export value, but, owing to war conditions, is not up to the recognized prewar standard. All this in order to avoid importing a few hundred tons of grass from Africa. Whether the matter will come to a head when trade begins to recover and thus force the government to review the situation with more concern remains to be seen.

Further light is thrown on the restricted paper position in Great Britain by the publication of import and export returns for the first six months of the present year in comparison with a half of 1938. Whereas the total imports for January-June 1945 reached only 166,503 tons, those for the half of 1938 totaled 535,353 tons. Many items shown in the 1938 figures do not appear at all in those of 1945, and of those included it is noted that newsprint is down from 223,173 to 88,176 tons; kraft from 40,531 to 7,426 tons, but wallboards are above prewar with 14,380 against 13,338 tons, thus stressing the work on bomb damage repairs in the first half of 1945. It is also interesting to note that while the tonnage of importation is down to roughly 33 1/3 per cent, the cost of these imports is only reduced to approximately 75 per cent.

On the export side, the totals for the half years under review were 88,220 tons (1938) and 16,712 (1945), and while all exports to British Empire and foreign countries were lowered appreciably, exports to the U. S. A. advanced from 599 tons to 696 tons. Among the materials exports china clay declined from 183,269 tons to 40,573 tons, although the total to the United States was practically maintained at 32,747 tons against 37,206 tons.

◆

AUSTRALIAN MILLS WOULD EXCHANGE EUCALYPTUS PULP FOR NEWSPRINT

There are prospects for a mutually profitable trade between Canada and Australia in pulp and paper products according to Sir Norman Everard Brookes.

Sir Norman, who is chairman of the Australian Paper Manufacturers Ltd.,

This Book...
REVOLUTIONIZED
MATERIAL HANDLING
...it defined and crystallized the unit packaging method
CLARK CARLOADER METHOD
CLARK TRUCTRACTOR
The publication of this book started men of industrial plants and railroads thinking along new lines.
Out of this book stemmed the material handling principles and methods that have enabled the Army and Navy to successfully handle in this war the burden of supplies, munitions and equipment.
Use the coupon below for your copy.
CLARK TRUCTRACTOR DIVISION
1028 JAMES STREET • BATTLE CREEK, MICHIGAN
I would like a copy of your book "CLARK CARLOADER METHOD"
Name
Company
Address
City Zone State

visited mills in Canada recently in the interest of the Australian paper industry's postwar needs. He stated that the expansion planned in his country would not fill its requirements for newsprint and paper products. He added they were hopeful that Canada would be able to supply a large part of this deficit.

The suggestion was made by Sir Norman that the papermaking industry of Australia is in a position to make a reciprocal agreement with Canada, by which eucalyptus pulp, made in Australia, could be shipped to Canada for making fine writing paper.

◆

IMPROVEMENTS BEING RUSHED AT WESTMINSTER

According to official announcement, the $1,250,000 improvement program to be carried out by the Westminster Paper Company, Ltd., Westminster, British Columbia, will increase the number of employees from 220 to 325, and will double the output of the plant.

The new additions will include a new filtering plant, a third hog fuel-burning boiler, a complete new fuel storage system with modern conveyor, two three-story buildings, a new office building with space for modern locker rooms and a cafeteria, and a new and larger wharf and bulkhead along the Fraser River.

The Dominion Construction Company Limited, which is in charge of the project, is rushing the work for completion as early as possible.

◆

Washington News

The War Production Board will have ceased to exist by the time this publication reaches its readers, and will have been succeeded by the Civilian Production Administration. Rapid changes in personnel are being made, Benton R. Cancell retiring as Director of the Forest Products Bureau to go to Powell River Paper Company as vice president in charge of operations. A similar position in the Civilian Production Administration will be taken by George Johnson, recently released from service with the Navy, and formerly on the staff of the Writing Paper Manufacturers Association.

Although official action for the collection of wastepaper has been dropped by the war Production Board, with its approaching dissolution, a new campaign has been undertaken by industry representatives to meet the threat of slackened collections following V-J Day.

A national re-employment program sponsored by both government and industry has been launched with the active backing of the periodical weekly and daily press, and the Pulpwood Consuming Industries Committee in an effort to speed the recruitment for mill and woods operations for well-paid positions in the pulp and paper field. The industry representatives will work closely with the United States Employment Service both to encourage recruitment and to properly place applicants for positions.

Washington authorities are disturbed by the strike situation as it affects the paper industry. The general attitude of labor toward employment is having an indirect effect on paper output, as workers are not returning to the mills from war or war plant service, as rapidly as had been expected. The coal strike, until its settlement threatened to cut off mills from the fuel necessary to keep in operation. The wire weavers strike, if carried through as threatened, will leave many mills without the needed Fourdrinier wires to keep their machines in operation. Wage increases granted in Michigan to meet the competitive employment and high wages of the automotive industry have been taken as a basis by paper mill workers in other parts of the country to seek wage increases. These problems bearing directly on the paper industry are dove-tailed with the generally unsatisfactory labor picture, the threat of inflation if the wage spiral causes higher prices for commodities.

◆

INDUSTRY LOOKS TOWARD PAPER DUTY REVISIONS

"Within the next four months the paper industry will have some definite information as to the extent to which proposals will be made for the revision of existing duty rates on paper," according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry. "Preliminary studies are already being made at Washington of the provisions of existing agreements with United Kingdom, Canada, France, Belgium, Holland and Czecho-Slovakia, and new agreements are in contemplation with Russia, China, New Zealand, Australia and South Africa. Duty rates were reduced by the old agreements, each of which contained some provision for reduced tariffs on paper, but the new agreements are proposed with countries which do not ship, but which might be persuaded to import larger volumes of American paper."

This statement was made in a recent report to the industry, which is expected to be affected to some extent by pending proposals. Under existing law sufficient advance notice must be given to industry so that arguments can be presented before final negotiations are undertaken with the contracting nations.

Customs officials have decided several issues which have been pending for some time. Coating raw stock has been held to be dutiable as paper not specially provided for at 30 per cent, insulation board has been valued for duty purposes at the Canadian market price and not at the lower price for which it is sold in this market, and wrapping paper in part only of kraft has been held dutiable as wrapping paper at 25 per cent and not as kraft wrapping at 20 per cent. The lower rate is permitted only for pure sulphate paper.

◆

LAKE ST. JOHN CO. GIVES NOTICE IT WILL REDEEM BONDS

Notice has been given by the Lake St. John Power & Paper Company, Ltd., Quebec, that it will redeem at 103 and accrued interest (in accordance with the terms of the trust deed), approximately $850,000 of the first mortgage 5½'s of 1961 as at January 1, 1946.

It is understood company funds provide for this operation which will result in reducing the amount of the 5½'s outstanding to around $4,000,000, and the total funded debt, including the 5's, to around $7,000,000. The original authorized combined total was $18,000,000 of which $9,180,100 was issued.

◆

PLANT IMPROVEMENTS AND ADDITIONS AT TAGGART CORP.

Additions and plant improvements costing more than $40,000 are under construction at Taggart Corporation paper mill in Oswego, New York.

A Hydrapulper, to be housed in a one-story and basement building at the north end of the paper mill, will cost $15,264. The building, measuring 40 x 42 feet, will be of steel and concrete block construction.

A concrete slush stock tank costing $20,000 and an addition to the boiler house at a cost of $5,000 are also part of the building program.

◆

CANADA MAY LOWER OR EVEN REMOVE NEWSPRINT RATIONS TO PUBLISHERS

It has been learned in Ottawa that the Canadian government considers increasing, or even removing, the ration of newsprint to Canadian publishers. This report followed the announcement that all controls on Canadian newsprint exports will be lifted December 31. The removal of the export order means that after December 31 Ca-

SPECIFY "GENERAL CHEMICAL"

for effective pH control and maximum sizing

GENERAL CHEMICAL COMPANY products for the Paper Industry

Aluminum Sulfate (Standard and Iron Free) • Copper Sulfate Muriatic Acid (Hydrochloric) • Sodium Fluoride • Sodium Silicate Sodium Metasilicate • Glauber's Salt (Crystal or Anhydrous) • Salt Cake • Sodium Sulfide • Sodium Hyposulfite • Sodium Sulfite (Anhydrous) • Sodium Bisulfite (Solution or Anhydrous) • Disodium Phosphate • Trisodium Phosphate Tetrasodium Pyrophosphate • Sulfuric Acid • Nitre Cake (Sodium Bisulfate) • Nitric Acid

TODAY more than ever, paper makers are insisting on General Chemical "Alum" in their operations because they can rely on its uniformity for maximum sizing and desired pH.

Careful attention to all production details plus constant laboratory control make General Chemical Aluminum Sulfate a product of high quality in its various grades. Specify "General" for your quality paper-making chemicals!

[redacted]

Standard—Lump; Ground 99% thru 8 mesh, 95% thru 10 mesh; Powdered 95% thru 100 mesh.

Iron Free—Lump approx. 2½"; Ground thru 8 mesh.

[redacted]

Solutions: from 38°—60° Baume. Wt. Ratio (Na_2O to SiO_2) from 1:2.00—1:3.40.

Appearance: Opalescent to clear.

BASIC CHEMICALS

GENERAL CHEMICAL COMPANY

FOR AMERICAN INDUSTRY

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

nadian newsprint may be sold freely on the world market, subject only to minor Trade and Commerce Department restrictions. Simultaneously with this removal order, the Industry Compensation plan, inaugurated September, 1942, under which wartime burdens were equalized among all companies, will be ended.

◆

MODERNIZATION PROGRAM FOR BRUNSWICK ANNOUNCED

A program of modernization which will cost more than a million dollars has been announced by the Brunswick Pulp and Paper Company, Brunswick, Georgia.

The construction program will include a new storeroom, new and modern wood-handling equipment to handle the $1,500,000 supply of pulpwood bought annually from Georgia farmers and producers, additional and improved recovery equipment to save used products for re-use, and improvements on the pulp drying and cutting process to cost $150,000. A new water softening plant is under construction to handle part of the 18,000,000 gallons of water used daily.

◆

LABOR SUPPLY NEEDED AT POWELL RIVER TO SPEED CAP. PRODUCTION

An adequate labor supply is the main requisite needed to bring the plant of Powell River Company, Ltd., Powell River, B. C., into capacity production. Since the middle of September, the company has brought its sixth and seventh newsprint machines into production.

The installation of new equipment is being rushed all possible. The new hydraulic barker is now being installed and it is expected this will be in operation early in 1946. Other developments are: Expansion of the power plant, and a second 18,000-kw generator unit on order for the Stillwater power house.

◆

AMERICAN CAN COMPANY HAS PLANS FOR EXPANSION

A $2,250,000 expansion program for its plants at Los Angeles (Calif.) and Tampa (Fla.) has been announced by American Can Company.

The Los Angeles plant is one of the company's four now producing fiber milk containers at the rate of more than a billion annually; but because of the urgent demand in this area, new construction costing $570,000 will double the present capacity of the milk container section and more than double its warehouse area. New equipment and improvement of present installations call for more than $400,000.

At Tampa, building plans call for an investment of more than $1,000,000, while new can manufacturing equipment to be installed will cost in execess of $250,000. R. C. Taylor, vice president, said the company's enlarged plant and warehouse facilities in Tampa express its faith in that city as the center of the citrus industry and its belief in a greater future.

◆

AUSTRALIAN PAPER MEN VISIT CANADA TO STUDY PAPER MILL PRODUCTION

Three Australian paper men recently visited Montreal, studying Canadian methods of production in connection with expansion plans of Australia's fine paper production. They had traveled across Canada from the Pacific and visited plants in the neighborhood of Montreal before coming to the United States for three months.

Henry B. Somerset, who is director and general superintendent of the Associated Pulp and Paper Mills at Burnie, Tasmania, said this company, established in 1938, was virtually the sole source of supply in Australia for fine paper during the war. At present it produces 75 tons a day, but it is planned to raise the output to 100 tons. Mr. Somerset was accompanied on his trip by J. J. Graham, a technical assistant, and D. Neilsen, construction engineer.

Briefs . . .

▶▶▶ FIRE in a pulpwood pile at the East Angus (Que.) mill of Brompton Pulp & Paper Company, Ltd., recently destroyed an estimated 40,000 cords. The pile contained 60,000 cords. The blaze, which continued for two days, was thought to have been started by a spark from the motor of a conveyor belt. There was no damage to the mill itself.

◆

▶▶▶ A PLAN TO TRIPLE the output of roofing material by a $250,000 extension to its Industrial Reserve plant, is announced by Sidney Roofing & Paper Company, Ltd., Victoria, British Columbia, also, a $200,000 expansion of its affiliate, the National Box Limited plant at Vancouver.

■

▶▶▶ THE BAIE COMEAU plant of the Quebec North Shore Paper Company is being expanded at a cost of two to three million dollars. This program will increase the capacity of the plant by 10,000 tons per annum of sulphite pulp (intended for the American market), and the number of employees by about 20. Present capacity is 420 tons of newsprint, 370 tons of groundwood, and 60 tons of unbleached sulphite.

◆

▶▶▶ IN THE WATERSHED area near Empire, Oregon, the Coos Bay Pulp Corporation has purchased 1,000 acres of land. The land around Coos Bay is covered with a thriving growth of young timber, and it is planned to establish fire protection and reforestation practices to protect the watershed.

◆

▶▶▶ AN EXPANSION program which will cost $120,000 and increase the number of employees to 1,200, has been announced by the Gilman Paper Company, Gilman, Vermont. The plans call for improvements to be made at the Howland, Maine, pulp mill, new building extensions and new machinery at Gilman, and new equipment at the kraft bag mill.

◆

▶▶▶ THE SALE OF its paper mill, machinery, equipment, and inventory at Saugerties, New York, is announced by Diamond Mills Paper Company, Inc., New York City. The property was purchased by Fabricon Products, Inc., River Rouge, Michigan. The announcement states that the Diamond company will discontinue the manufacture of paper.

◆

▶▶▶ RESTRICTIONS governing the manufacture of paper napkins, tray covers, handkerchief and toilet tissues have been revoked by the Wartime Prices and Trade Board in Ottawa (Can.).

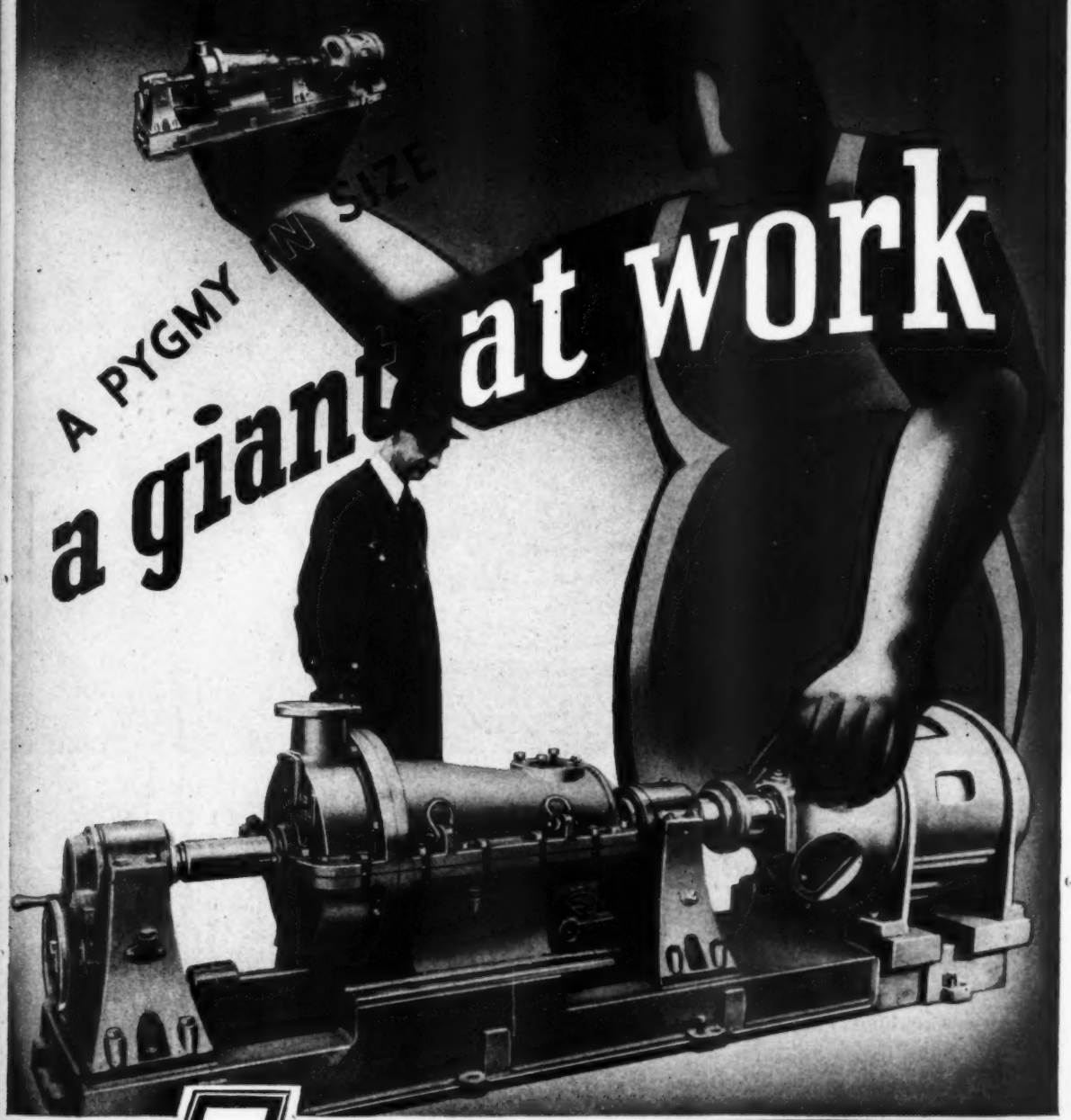
◆

▶▶▶ AN INSPECTION TRIP to the head office and Port Mellon (B. C.) plant of the Sorg Pulp Company, Ltd., was made recently by that company's president, J. A. Aull, and D. G. Driscoll, president of The Sorg Paper Company, Middletown, Ohio, together with directors of the two companies, H. C. Lange and L. C. Courier. Dr. Otto Kress of the Institute of Paper Chemistry, Appleton, Wisconsin, accompanied the party in a consulting capacity.

◆

▶▶▶ VETERANS, FORMER WAR workers, and farmers are urged to start work in the forests of central and eastern Canada where jobs by the thousands are open during the logging season, according to R. L. Welson, chairman of the executive board of the Canadian Pulp and Paper Association.

THE JONES *High Speed* REFINER

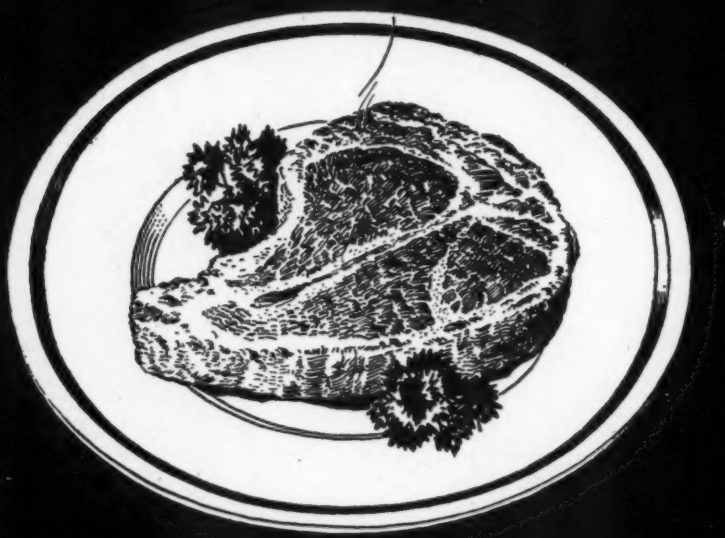


Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills

BETTER TIMES AHEAD



The inevitable reaction, as war-time restrictions are lifted, will be a compelling demand for the things we've missed . . . and fine paper will be no exception.

Quality will be the watchword. Will you set the standards for OPACITY, BRIGHTNESS and WHITENESS that will satisfy a market hungry for the best?

Your plan to use TITANOX pigments in your post-war stocks is pointing you in the right direction.

TITANOX in paper means QUALITY paper! For TITANOX contributes unsurpassed opacity, whiteness and brightness, extreme resistance to after yellowing and, in tinted stocks, outstanding clarity of color . . . all with a minimum of pigment.

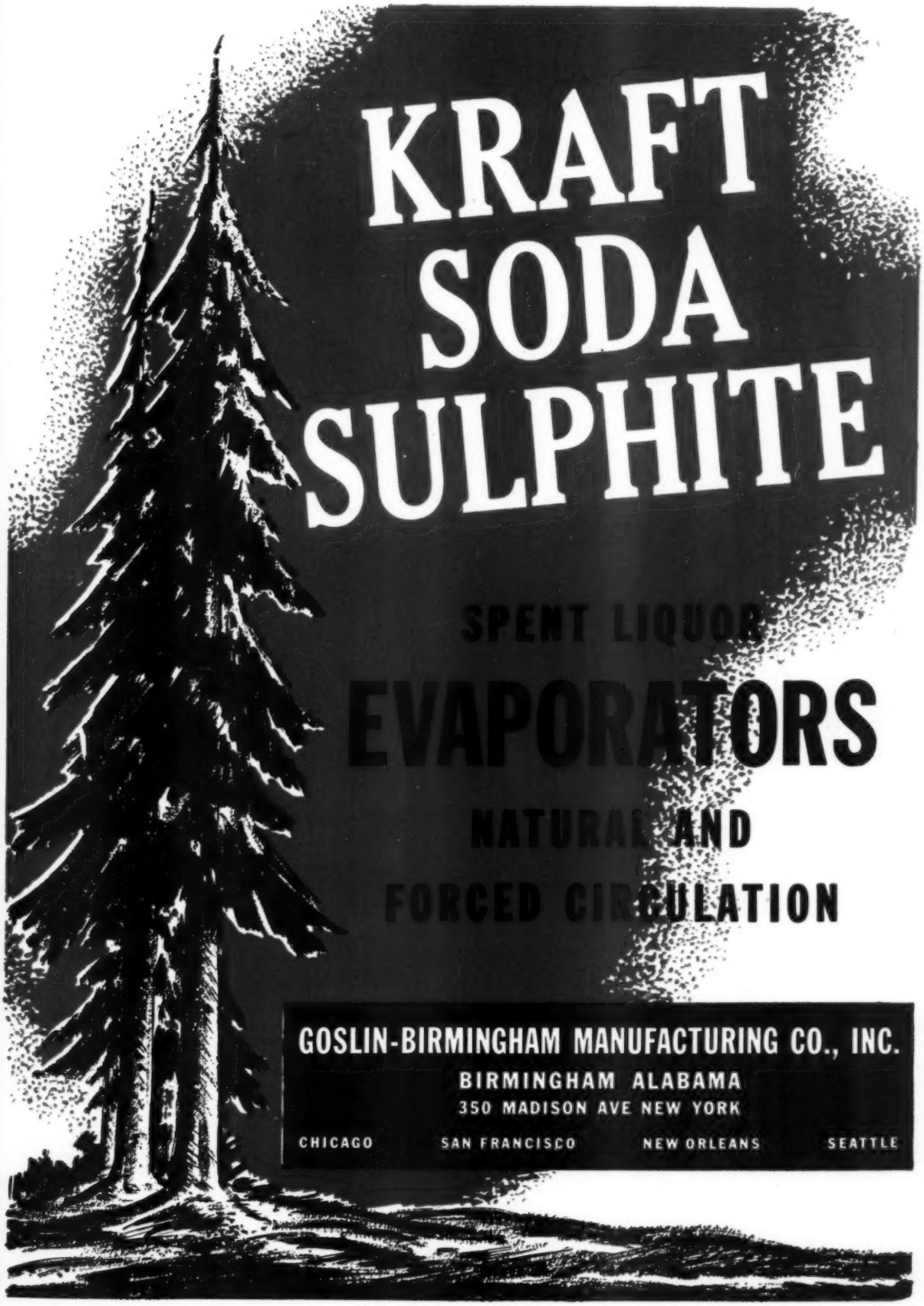
Plan now to use TITANOX pigments. They'll help you to keep out front in the race for business.

TITANOX

REG. U.S. PAT. OFF.

TITANOX

TITANIUM PIGMENT CORPORATION
SOLE SALES AGENT
111 Broadway, New York 6, New York
104 South Michigan Avenue, Chicago 3, Ill.
350 Townsend Street, San Francisco 7, Cal.
2472 Enterprise Street, Los Angeles 21, Cal.


KRAFT
SODA
SULPHITE
SPENT LIQUOR
EVAPORATORS
AND
FORCED CIRCULATION
GOSLIN-BIRMINGHAM MANUFACTURING CO., INC.
BIRMINGHAM ALABAMA
350 MADISON AVE NEW YORK
CHICAGO
SAN FRANCISCO
NEW ORLEANS
SEATTLE

Multiply the qualities in RICHLAND TRIPLEX dryer felts by the number of replacements you make in a year, and here's what you get every time . . . *standardized* economies of longer wear, high porosity, resistance to stretch and shrinkage, contact surfaces that stay smoother for a longer period of time. Top grades of cotton plus uniformly woven fabrics make these economies consistently possible when you specify RICHLAND TRIPLEX all-cotton dryer felts.

MT. VERNON WOODBERRY MILLS, INC.

TURNER HALSEY COMPANY

Selling Agents

40 WORTH STREET ★ NEW YORK, N. Y.

CHICAGO · NEW ORLEANS · ATLANTA · BALTIMORE · BOSTON · LOS ANGELES · SAN FRANCISCO

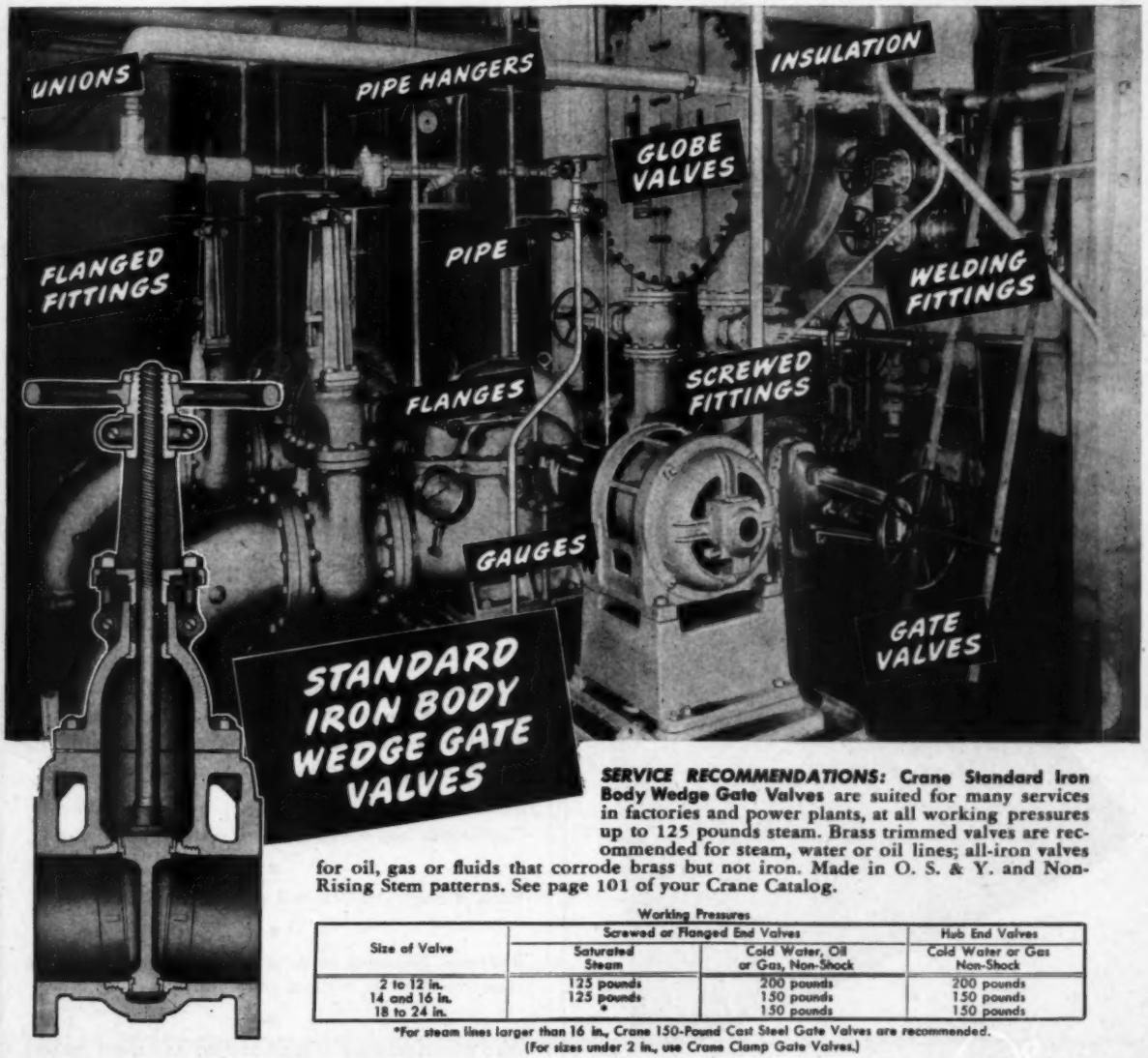
Where CRANE Can Help You in Piping Problems

ONE SOURCE OF SUPPLY • ONE RESPONSIBILITY • ONE STANDARD OF QUALITY

The conditions under which your piping systems operate govern your choice of piping materials. You can best determine the exact requirements. In that task you will find the Crane line a *truly* helpful service. By giving you the world's most complete selection of piping equipment for all applications, Crane makes it possible to get exactly what you need. You choose with complete confidence, for Crane, with 90 years' experience, points out clearly the distinct advantages of each type of valve, fittings and piping accessory.

In choosing Crane materials, you simplify any piping job. One order to your Crane Branch or Wholesaler covers all your needs. Uniform quality in all materials—plus single responsibility for them—helps keep installations at peak efficiency longer—at minimum cost. For maintenance or new work, the Crane line answers all piping equipment problems.

Condenser and circulating water pumps in power plant



SERVICE RECOMMENDATIONS: **Crane Standard Iron Body Wedge Gate Valves** are suited for many services in factories and power plants, at all working pressures up to 125 pounds steam. Brass trimmed valves are recommended for steam, water or oil lines; all-iron valves for oil, gas or fluids that corrode brass but not iron. Made in O. S. & Y. and Non-Rising Stem patterns. See page 101 of your Crane Catalog.

Working Pressures

Size of Valve	Screwed or Flanged End Valves		Hub End Valves
	Saturated Steam	Cold Water, Oil or Gas, Non-Shock	Cold Water or Gas Non-Shock
2 to 12 in.	125 pounds	200 pounds	200 pounds
14 and 16 in.	125 pounds	150 pounds	150 pounds
18 to 24 in.	*	150 pounds	150 pounds

*For steam lines larger than 16 in., Crane 150-Pound Cast Steel Gate Valves are recommended. (For sizes under 2 in., use Crane Clamp Gate Valves.)

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. • *Branches and Wholesalers Serving All Industrial Areas*

CRANE

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

The Famous

FULLER FIBER BROOM

THE FINEST TOOL OF ITS KIND

A SIZE AND WEIGHT FOR EVERY NEED

FLOOR BRUSHES
SCRUB BRUSHES
DUST BRUSHES
WET MOPS
DRY DUSTING MOPS
MACHINE BRUSHES
WAX & POLISH

ARMY E NAVY

Send for Catalog to Dept. 74

THE FULLER BRUSH COMPANY
INDUSTRIAL DIVISION · HARTFORD 2, CONN.

NOW IS THE TIME TO PUT PULP AND PAPER MANUFACTURE on a SAFE FOOTING!

Send for Catalog of

KLEMP OPEN STEEL GRATINGS AND STAIR TREADS

Shows modern installations of Klemp Welded and Klemp Riveted Gratings, with valuable information.

Solid, clean non-slip fireproof ventilating areas, in floorings, mezzanies, stairways, maholes, walkways, platforms, sidewalks, etc. KLEMP STAIR TREADS designed for ample strength against impact for both indoor and outdoor use.

Also mfrs. of HEXTEEL Heavy Duty Floor Armor for long-wearing, low maintenance floors. Write.

WM. F. KLEMP CO. **Steel Flooring Specialists**

6604 S. Melvina Ave., Chicago 38, Ill.

Special Representative: C. P. Robinson, 420 Lexington Ave. New York 17, New York

HERMANN CLAFLIN REFINER FOR STOCK PREPARATION

•

The several combinations of fillings obtainable with various knife widths and materials and special hydrating filling makes it possible to cover a wide range.

•

Continuous and batch beating systems.

•

High strengths developed at high freeness.

•

Replaces brushing jordans where cutting is not a requisite, with substantial power saving.

•

Also manufacturers of pulp testing and sheet making apparatus. TAPPI standard.

•

THE HERMANN MANUFACTURING CO.
Lancaster, Ohio

ONE *recognized standard*

THE COTTRELL PROCESS OF ELECTRICAL PRECIPITATION

FOR GAS CLEANING, smoke abatement and removal of dust, fume, tar and other suspended matter from gas, there has been one universally accepted process for more than thirty years. In answer to your special problem, a Cottrell installation incorporating this rich experience in research, development and worldwide operation means the complete fulfillment of your requirements.

RESEARCH CORPORATION

NEW YORK 17: 405 LEXINGTON AVENUE
CHICAGO 3: 122 SO. MICHIGAN AVENUE

MERFENELOPE
Slime Chaser

In a one-ounce sealed envelope. Throw it in the beater unopened.

Cleans Pipes
Kills Bacteria
Reduces Washups
Fewer Slime Rejects

R. T. VANDERBILT CO., INC.
230 Park Avenue, New York City

EDITORIAL . . . . . .

Abolish the OPA

▶▶▶ THE PATH TO reconversion is blocked by OPA ceilings, not only in the great majority of industries, but also in the paper industry.

The outstanding need in this country today is for all-out production of low-priced consumer commodities. This need is being sabotaged by the senseless adherence of the OPA to immutable ceiling prices—like the laws of the Medes and Persians, from which there was no shadow of turning.

A case in point is what is happening in the kraft paper division, particularly in the wrapping and bag paper items, which aggregated 1,299,970 tons in 1941. This large tonnage is essential to reconversion in every industry, in every city and town in the country. Industries, which converted to war production needing little or no wrappings, have now reconverted to peacetime civilian production of commodities, urgently needing large tonnages of low cost wrappings and bags. Without them, they cannot deliver their products into the markets. If they cannot deliver, they cannot continue to operate—they must shut down. Thus, reconversion is blocked.

OPA, a government agency created by executive decree for the purpose of controlling prices—not profits—during the war, established prices on kraft paper, based upon current prices from October 1 to October 15, 1941. There they have remained fixed to date, with the sole exception of one change—the raising of the basic weight from 30 pound to 40 pound, on which the base price was to apply.

The producers accepted this base price regulation realizing that it was their patriotic duty to supply the Government and critical civilian demand and to co-operate with the war effort while the war lasted. The base price was neither adequate nor satisfactory, for, as the war progressed, cost of production increased and many were the protesting conferences held by mill managements and groups of mills with OPA officials in Washington concerning the constantly growing price inequities, all to no avail.

Finding it impossible to get any co-operation from Washington or any consideration that would permit them to continue to make wrappings at a profit, what did the producers of kraft paper do? They immediately set about getting a better price for their operations by shifting their wrapping tonnages into such other grades of paper that netted them a higher return.

The results are now becoming apparent. The citation of a couple of instances will serve to illustrate the point. In 1941, the total production of kraft wrappings and bag papers was 1,299,970 tons. In 1944, the total was 991,957 tons, showing a decline of 308,013 tons.

Before the war, the amount of bleached kraft pulp going into high grade book papers and writings was comparatively negligible. In 1944, the total bleached kraft shifted to those higher priced papers was 335,888 tons.

This is but the beginning of the shift. Some mills have recently announced that they are withdrawing all their unbleached kraft papers from the market, for they are now bleaching their pulps and putting them into other higher grades of papers, thereby yielding higher returns per ton. And all of this going on within the OPA structure to the benefit of the mills and the detriment of the public dependent upon volume low-cost tonnage wrappings for reconversion.

The shift in all grades of low-priced tonnage to higher grade tonnage is taking place in every mill in the country, notably in newsprint where the shift is to wood book papers, and in all groundwood book mills, the shift is to high grade book and writings, and this trend will continue throughout the industry as long as the OPA's uneconomic, arbitrary price ceilings are maintained.

In 1941, the paper industry produced its all-time high of 17,762,365 tons, which was 96 per cent of capacity. In the following four years, although favored with the greatest continuous increased demand for its products, its production has consistently declined. In other words, the demand has been unprecedented, but the supply of paper has declined, because its prices are frozen by OPA at an unprofitable level, while the cost of production has persistently risen.

Conservative estimates place the present potential postwar demand at 24,000,000 tons which would justify the installation of 5,000,000 tons of increased production.

There will be little new production because of the lack of price incentive. There will be no price incentive possible as long as the OPA continues its price control.

The only logical answer is to *abolish the OPA* forthwith, and thus, remove the road block in the path of reconversion.

Convention Contact

▶▶▶ PAPERMAKERS as a rule are considered rather good travelers. They like to get together to talk shop whether in one another's mill, on the train, in the air, or in some hotel room. No doubt from these contacts, all participants benefit since an exchange of ideas is always enlightening.

There is another kind of contact well-known to many papermakers. It might be called the convention contact.

In the days previous to the war, some of the meetings of paper groups, like a powerful magnet, attracted papermakers from the four corners of the United States—possibly, it would not be too strong to say "of the world." Just how much did many of these men gain from attendance at such meetings? The individual must answer that question for himself.

Some papermaking organizations, however, had no hesitancy in saying that these meetings were just the bunk. Such firms felt that their representatives got little or no benefit from them. These same firms probably gave little thought to how little their men had contributed to the success of the meetings by regular attendance at sessions, by participation in the sessions and by paying attention to the remarks of various speakers.

Be that as it may, the war put a stop to conventions. Transportation and hotel facilities during wartime were taxed to the utmost and conventions were just not the order of the day—these facilities still are being taxed.

Conventions, nevertheless, are again being held. Many persons already have arranged for accommodations for attendance at the February, 1946, meetings in New York. It surely will be safe to say that these meetings, possibly limited as to attendance, will take on all of the fervor of a grand home-coming. Friends who haven't seen each other, perhaps for years, will be brought together again, and new friendships will be made. These contacts are all so worthwhile but they will be even better if each one present will do his best to get out of every session all that he can for the benefit of himself an dof his company.

Current Thought

Is There Nothing Immune?

WILLIAM SIBLEY

▶▶▶ BEING A WRITER, I would much rather sit here in front of my typewriter and pound out my thoughts and ideas—yes, by rule-of-thumb, the hunt-and-peck system—and as my secretary tells me: "with that delicate elephant's foot touch." But, however done, I *do* enjoy writing. I like to put words together. Such work gives me a sense of accomplishment. But every now and then (frequently, in fact) I stumble across a piece by someone else—the contents of which I revile myself for not knowing, or the context of which I envy from the standpoint of composition.

This month I am setting aside my personal desire to write in favor of one written by Frank R. Kent, whose pieces appear in the *Chicago Journal of Commerce*. His article is on the subject of the Red Cross—an organization to which I have contributed many hundreds of dollars and Mrs. Sibley, many hundreds of hours of labor. Mr. Kent's subject matter should have wider currency (in my opinion)—hence, this quotation:

"Washington, Oct. 10.—In considering the Red Cross situation there is another deeply disturbing factor which, for obvious reasons, it would have been damaging to discuss while the war was on. Now that peace has come, important persons in the organization believe it essential to tell the truth so that an exceedingly unhealthy condition can be cured.

"The fact is that almost from our entrance into the war the Red Cross has paid large sums, ranging from $100,000 to $200,000 into the treasuries of the two big labor organizations, the C.I.O. and the A.F.L., to 'reimburse' them for 'expenses' incurred in aiding the Red Cross. It is fair to say that though there is plenty of criticism of Basil O'Connor, the present Red Cross head, this is not his fault. He has continued it, but he did not originate it—he inherited it.

"It began back in 1942, when, in the written words of a high official making a report in 1944 on this subject, 'the Red Cross had the choice of taking part in a labor agreement or of refusing to take part. If we joined, we could not have a free ride but must pay our share. If we did not join, we surrendered the field of union and plant organization to a combined effort on the part of labor and the 'chests,' with the Red Cross working at great disadvantage.

"In this same report it is pointed out that the National War Fund and various community chests and councils had made prior arrangements with the labor leaders to 'reimburse' their organizations for 'expenses' and the Red Cross was the last to come in. 'The suggestion,' the report says, 'came as a shock but there seemed nothing to do except go along.'

"In the year the Red Cross paid $200,000 to the labor group, it really shocked a number of members of the central committee who heard of it then for the first time. Protests were made by such persons as George Harrison, Mrs. Dwight F. Davis, Landon Thorne and others. Mrs. Davis and Mr. Harrison twice voted against ratification of this 'arrangement' by the central committee. Because of it, Mr. Thorne resigned. It seemed to these that the whole arrangement by which labor became the one group 'reimbursed' for 'expenses' and thus specially favored, was fundamentally bad. In a strong letter to the chairman one objector asked these questions:

"Is there not danger that an agreement with labor may lead to demands for further special privileges?" "What would be our defense if publicly accused of buying the good will of labor or any other group?" "What effect would it have on the millions of volunteers who give unstintedly of their time and resources without thought of compensation?" "Would we be justified in making a similar arrangement with the American Bankers Association?"

"To all this the directing head, Norman Davis, whose character was of the highest, and the other officials who had made the arrangement, replied at great length. They agreed that the principle was bad but insisted it was necessary.

"In the aforesaid written report the statement was made that before the agreement the labor leaders and much of the rank and file had been indifferent and unfriendly; that because of the National War Fund and the 'chests' the Red Cross had no alternative: that good results have been had; that no wrong is involved in the arrangement.

"As to the results, this is disputed. There are those who insist that just as much money could have been collected from labor without the arrangement as was collected with it—particularly when the 'expense' money was deducted. As to the wrong, it is admitted that no crime has been committed; but it is insisted that the principle is bad and the practice dead against the Red Cross creed and spirit. The best proof of this is that both the Red Cross management and labor have deemed it necessary to keep this 'arrangement' a complete secret. Those who protested were pleaded with not to resign because the publicity would hurt the Red Cross.

"With the war over, they feel this is no longer a valid argument and the Red Cross interests will be served by publicity. They think, in fact, that publicity is the only way to cure this disease. They want the arrangements discontinued. They think that the National War Funds and the 'chests'—but particularly the Red Cross—should not have to enter into such arrangements to get results.

"As for organized labor, whose leaders have talked so much about its patriotism and sacrifices, it should not be in a position where it can be said that it is 'indifferent and unfriendly' unless its expenses are paid. Labor unions are no longer poor. They are, indeed, rich, with millions in their treasuries, able to spend vast sums in political campaigns for propaganda and headquarters.

"It is not a distinction to be proud of that union labor is the only group in the country which had to be paid to get it to help the Red Cross. The decent patriotic rank and file of laboring men have not known that up to date. They are not going to like it now."

It's tough to be disillusioned. More especially when it is the Red Cross—for that is the one organization most naive I believe—free from "interests" or "lobbies."

Well—there you are. Tell your Red Cross worker what you will. Apparently there is nothing immune.

Four Belmers in a Wisconsin paper mill, driven by LINK-BELT Silverstreak Silent chain drives. Operation is practically continuous; dependability is a paramount necessity.

CONTINUOUS SERVICE IN PAPER MILL SHOWS STAMINA AND LOW COST!

There's no vacation for paper mill machinery these days! In fact, the four encased Link-Belt silent chain drives shown above, have operated practically continuously since they were installed 10 years ago, requiring only periodic oil changes. Previously these machines were driven by long flat belts, coming from the floor below. Superior performance of LINK-BELT Silverstreak silent chain drives on this application has led to their adoption for numerous other applications in this same mill. Operating on short centers, they save valuable space; require practically no attention or maintenance; unaffected by moisture or operating temperatures up to 250° F., they last indefinitely; and because they totally eliminate slip, transmit every ounce of power from motor to driven machine.

Send for Silent Chain Data Book No. 125 for engineering and application data.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities. 10,101

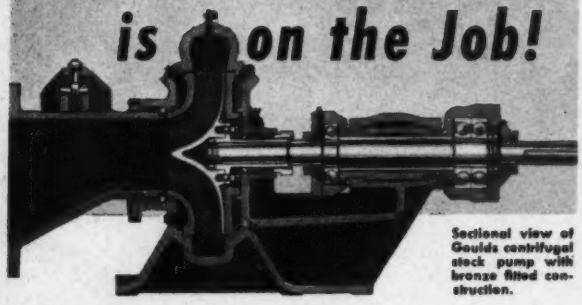
Remember:

IT'S TEETH, NOT TENSION, THAT GIVES SILVERSTREAK SILENT CHAIN ITS OUTSTANDING EFFICIENCY AND ECONOMY.

LINK-BELT
Silverstreak
SILENT CHAIN DRIVE

Pumping paper stock?

MAKE SURE Goulds is on the Job!



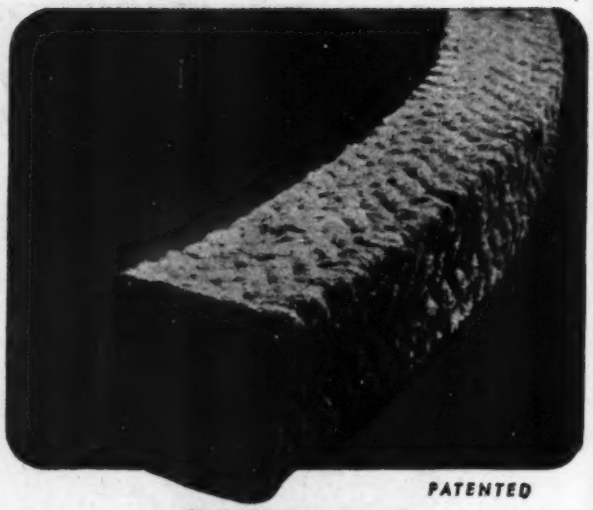
Sectional view of Goulds centrifugal stock pump with bronze fitted construction.

There are many sound reasons why the paper industry prefers Goulds Pumps but they can all be summed up in one sentence: Goulds Pumps have *proved dependable* on all paper pumping jobs! It should be added that these pumps are designed to provide heavy-duty service with the elimination of air binding and with maintained alignment. Suction connections and casing are easily accessible for cleaning . . . without disturbing pump connections. So if you have a paper stock pumping job to do, note the services standard Goulds Pumps will handle . . . then get in touch with pump headquarters for *the* pump for *the* job.

PUMP	SERVICE
Goulds	CLEAR WATER
Goulds	WHITE WATER
Goulds	BLACK LIQUOR
Goulds	CAUSTIC SODA LIQUOR
Goulds	SULPHUROUS ACID
Goulds	HIGH CONSISTENCY STOCKS
Goulds	CHEMICAL RECOVERY

Goulds PUMPS, INC.

the PUMP FOR the JOB SENECA FALLS, N.Y.



PATENTED

GARLOCK

LATTICE-BRAID PACKING

Lasts Longer!

The unique structural design of Garlock LATTICE-BRAID holds the strands together even when the packing is worn far beyond the serviceable limits of wear of ordinary braided packings.

This same "lattice" braiding provides unusual flexibility and semi-automatic pressure action.

Garlock LATTICE-BRAID packing is furnished in several styles for various types of service. Write for illustrated descriptive folder.

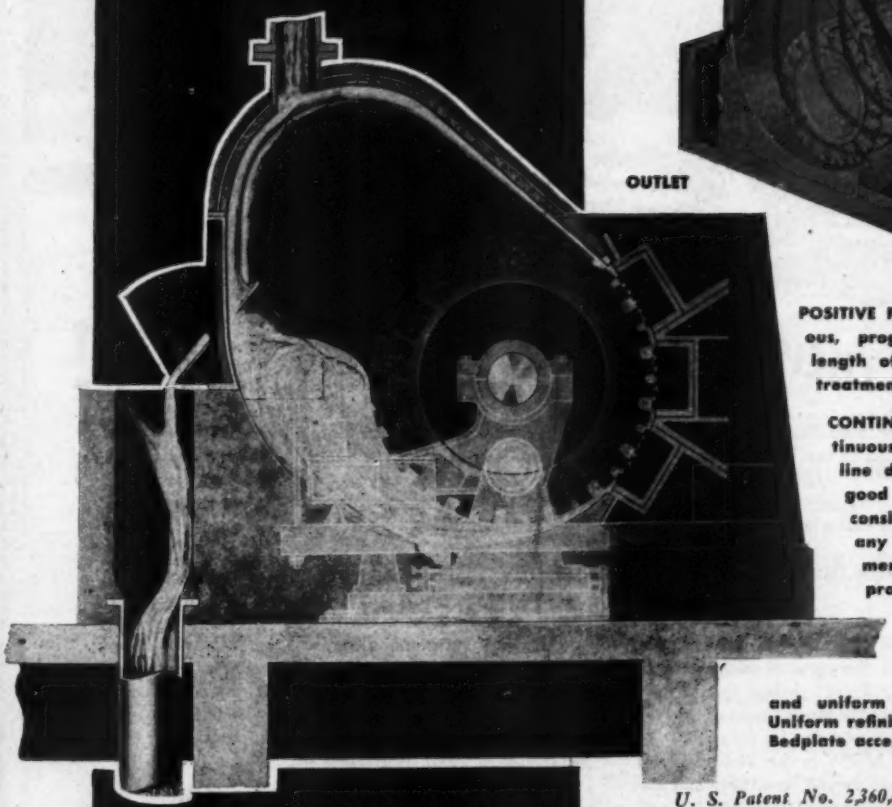
Garlock 731 Lattice-Braid Coil

THE GARLOCK PACKING CO., PALMYRA, N. Y.
In Canada: The Garlock Packing Company of Canada, Limited, Montreal, Quebec

GARLOCK

The ROLL-O-FINER

Positive Fibre Treatment . . . Continuous, High Density Beating



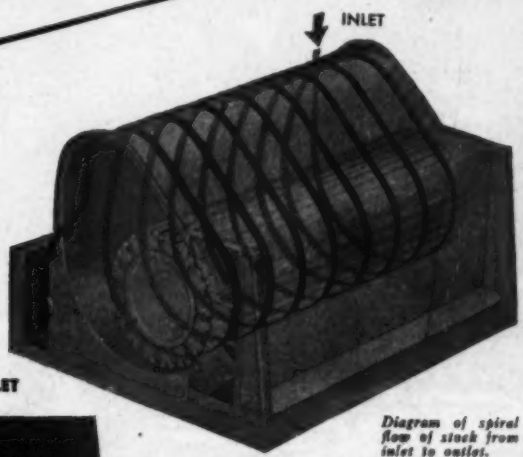


Diagram of spiral flow of stock from inlet to outlet.

POSITIVE FIBRE TREATMENT — The continuous, progressive, recycling of the full length of roll results in highly efficient treatment of all fibres.

CONTINUOUS BEATING — Ideal for continuous beating of all stocks. Streamline design of stock chamber insures good circulation of stock up to 8% consistency. Installed in series allows any desired amount of stock treatment. Basalt Lava stone treatment provides high strength.

ADVANTAGES —

Controlled pressure. Positive and uniform circulation. High consistencies. Uniform refining. Large capacity. Low power. Bedplate accessibility.

U. S. Patent No. 2,360,854 — Mexico 43,184. Canada, Great Britain and Sweden pending.

PIA INC

PAPER and INDUSTRIAL APPLIANCES
Incorporated
122 East 42nd Street, New York, N. Y.

Write for Roll-O-Finer Bulletin

Now—MATCH THEIR BEST WITH YOUR MOST IN THE VICTORY LOAN!

Top off your good work on your Payroll Savings Plan with an outstanding showing in the Victory Loan—our last all-out effort!

Help bring our boys back to the homes for which they fought—and give our wounded heroes the best of medical care—by backing the Victory Loan! You know your quota! You also know by past war-loan experience that your personal effort and plant solicitation are required to make your quota.

Sell the New F.D. Roosevelt Memorial $200 Bond through your PAYROLL SAVINGS PLAN!

In rallies, interdepartmental contests, and solicitations, promote the new Franklin Delano Roosevelt Memorial $200 Bond! Better than "cash in hand," Victory Bonds enable the buyers to build for the future—assure a needed nest egg for old age.

Keep on giving YOUR MOST to the Victory Loan! All Bond payroll deductions during November and December will be credited to your quota. Every Victory Bond is a "Thank You" to our battle-weary men overseas—also a definite aid in making their dreams of home come true! Get behind the Victory Loan to promote peacetime prosperity for our returning veterans, your nation, your employees—and your own industry!

The Treasury Department acknowledges with appreciation the publication of this message by

The Paper Industry and Paper World

VICTORY LOAN

This is an official U. S. Treasury advertisement prepared under auspices of Treasury Department and War Advertising Council

MILL ORGANIZATION CHART

OF INTEREST TO KEY MEN IN ALL POSITIONS

Are You A Key Man in Your Mill? If so, Here is A Message For You.

EXECUTIVE OFFICE	Black-Clawson can serve top management as:	Councilors on mill expansion problems. On ways to cover conversion costs; on equipment for production of new grades.
MILL MANAGEMENT	Black-Clawson works with the General Manager on:	Ways to make mill more efficient at present capacity; ways to step up capacity; ways to cut cost of conversion.
RESEARCH	Black-Clawson serves the Chemist on stock control by:	Installing preparation equipment to hold stock uniform; by cooperating on development of new grades or improvement of present one.
MILL ENGINEERING	Black-Clawson cooperates with the Chief Engineer by:	Suggesting improved mill layouts based on experience in other mills; furnishing Scale Templets of Equipment, Slide Rules for Ready Calculations.
PURCHASING	Black-Clawson aids the Purchasing Agent in many ways by:	Responding promptly on requests for estimates; quoting fair prices; and suggesting other material and supply sources.
PRODUCTION	Black-Clawson backs the Superintendent at every turn by:	Providing him with the latest in high production and special equipment based on long experience with his problems and needs.
SALES	Black-Clawson strengthens the hand of Sales Manager by:	Helping mill to supply him with quality papers and at lowest possible cost per ton.
MAINTENANCE	Black-Clawson lightens load of the Millwright:	Because B-C equipment is invariably built sturdy and less likely to cause trouble or break down; equipment easy to oil and service.
FINANCIAL	Black-Clawson a friend of the Treasurer's office:	Because B-C equipment makes for better grades, more saleable papers, less costly papers to produce, hence profitable over all operation.

THE BLACK-CLAWSON CO., Hamilton, Ohio

Divisions: Shartle Bros. Machine Co., Middletown, Ohio. Dilts Machine Works, Fulton, N. Y.
Associate: Alexander Flock, Ltd., Ottawa, Canada.

LOOK WHO'S IN THE SADDLE NOW...

Our old friend, John Q. Consumer, has taken the Mikado's place again and he is riding high, wide and handsome. He recognizes the signs of the coming buyers' market—getting tough about it, too.

Instead of begging for tonnage without regard to quality he is beginning to *specify* the qualities he wants in paper and board. And he is getting those qualities from manufacturers whose machines are equipped with Hamilton Felts.

By removing more water at the couch Hamilton Felts permit top speeds for the machines; by delivering stronger, better formed webs they reduce broke; by using less steam at the driers they eliminate the danger of overheating the sheets and making them brittle.

• From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

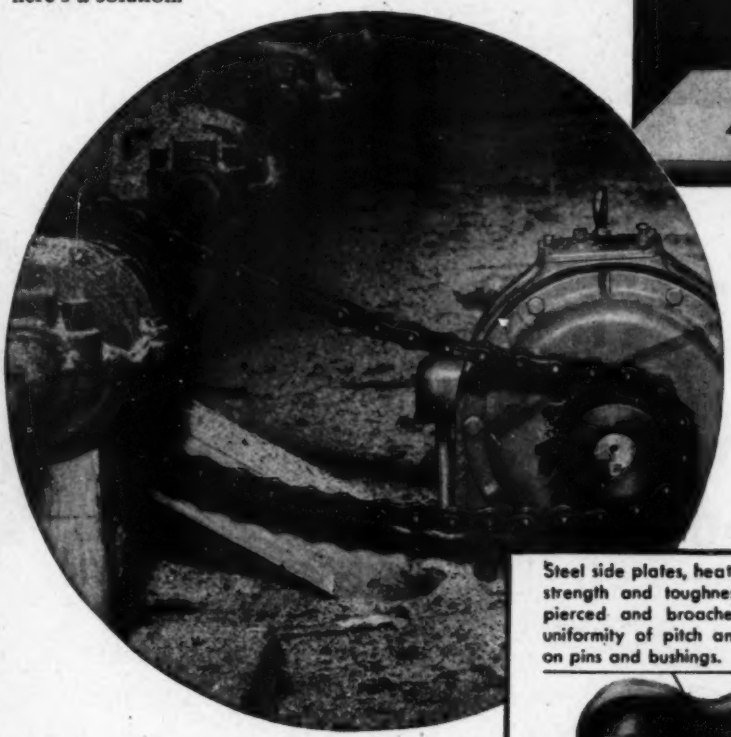
• Miami Woolen Mills •

Hamilton Felts

• Established 1858 •

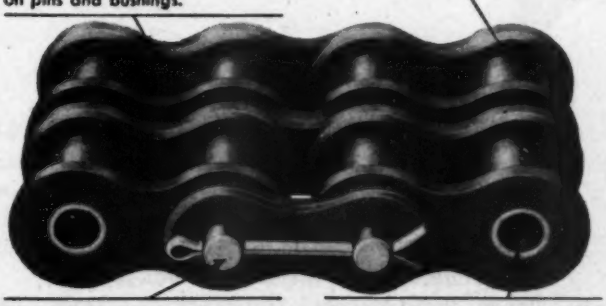
CUTTING CONVEYING COSTS *Starts Here!*

① IF YOU'RE LOOKING for greater efficiency from your conveyors, start with the drive. Is it putting all the power into the conveyor? Does it have maximum ability to take heavy loading and intermittent shock loads? Can it operate efficiently under dusty, gritty and moist conditions? If not, here's a solution.



② SWITCH TO BALDWIN-REX roller chain belts and sprockets and watch your costs go down. Take this pulp mill conveyor drive, for example. There's no power loss here due to slippage. The Baldwin-Rex roller chain transmits every ounce of power. Its efficiency is not affected by the dust and dirt. It absorbs shocks and heavy loads . . . protects the motor and other equipment from damage. The ability of this sturdy chain drive to operate efficiently through years of dependable service with minimum maintenance makes it a top choice throughout the pulp and paper industry.

③ BALDWIN-REX ROLLER CHAIN BELTS are easily and quickly installed and operate effectively on either long or short centers. As this closeup indicates, they are precision built of highest quality materials. They do not require frequent adjustment and do not create a fire hazard from heat or static electricity. Investigate them for your mill.


Steel side plates, heat-treated for strength and toughness, blanked, pierced and broached to insure uniformity of pitch and press fits on pins and bushings.
Alloy steel roller heat-treated for extreme toughness and resistance to wear, then ground to size.
Alloy steel pin, case hardened, ground for accuracy, superior bearing surface. Shorter pitch chains furnished with riveted construction.
Alloy, case hardened steel bushing ground for accuracy and press fits in side bars.

For catalogs on Baldwin-Rex roller chain belts or competent information on your specific drive problems, write **BALDWIN-DUCKWORTH** *Division of* **CHAIN BELT COMPANY,** *367 Plainfield Street, Springfield 2, Mass.*

BALDWIN-REX *ROLLER CHAIN BELTS*

Baldwin-Duckworth Division, Springfield 2, Massachusetts • Rex Chain Belt and Transmission Division, Rex Conveyor and Process Equipment Division, Milwaukee 4, Wisconsin

Don't let your plug valves act as BRAKES!

a.c.f.

FULL PIPE-AREA Lubricated Plug Valves provide Unretarded Lading Flow

Paper pulp, pulp while in process, black liquor, white liquor, caustics and acids all flow *unrestrictedly* through your pipe lines when a.c.f. *full pipe area* Lubricated Plug Valves are on the job! Here's why: the cylindrical plug provides a well-proportioned, round-cornered port opening — there is no change in flow direction — turbulence is avoided. Because flow velocities are not increased, abrasion is reduced — longer valve life results and costs in time, labor and power are cut.

Seating surfaces of a.c.f. Lubricated Plug Valves are sealed away from the flow stream when in the open position (another protection against abrasion) and balancing of lubricant pressures against line pressure assures valve tightness against head leaks. The lubricant likewise keeps corrosion at a minimum.

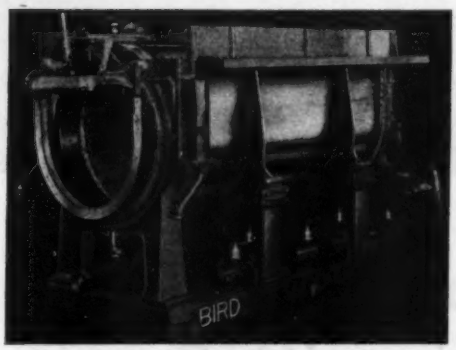
a.c.f. Lubricated Plug Valves may be installed in any position. They operate easily and *at a quarter turn*. No special tools are required for installation or operation. a.c.f. Lubricated Plug Valves will efficiently handle all processing and industrial plant ladings. Representatives in principal cities carry adequate warehouse stock for quick delivery. Send for Catalog #3-P.

AMERICAN CAR AND FOUNDRY COMPANY

Valve Department • 30 Church Street, New York 8, N. Y.

For Continuous, Maximum Production of Uniformly Clean Paper

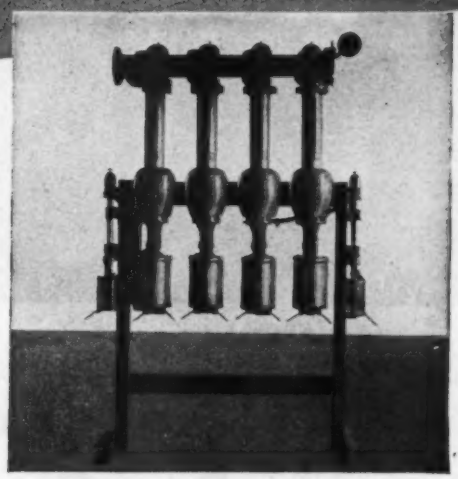
YOU NEED...



The BIRD SCREEN

The big, modern Bird Screen does more than take out larger-than-fibre dirt and foreign matter, and thereby protect the machine wire. It individualizes the fibres for good formation at top machine speed. Lumps, strings and slime are eliminated.

Better than *eighty per cent* of all the paper produced in North America passes through Bird Screens.



The BIRD DIRTEC

This new and more efficient pressure-drop dirt remover gets the dirt of different-than-fibre specific gravity, however fine. It is simple, compact, without moving parts, easy and economical to install operate and maintain.

With the Bird Screen, the Bird Dirtec offers many papermakers the one best combination for uniformly clean paper at lowest cost per ton.

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Bigger and Better Suction Box Covers—with Ryertex

26 foot Ryertex cover will speed newsprint production

This huge Ryertex laminated plastic suction box cover, with its more than 2,400 holes, was recently furnished to a Canadian news print mill. The reasons for selecting Ryertex are many: Ryertex is a much harder, stronger, and more uniform material than wood. It won't split, crack, splinter or warp. It possesses unique bearing properties with low coefficient of friction when water lubricated. This means slow, even wear, longer life, and greater operating efficiency. These qualities have been proven through performance in hundreds of other mill installations.

Ryertex is also particularly well suited for bearing applications. Installations are made on the basis that they more than pay for themselves through economies of lubricant, power expended, longer life and ease of maintenance. Ryertex lends itself to any type of lubricant, oil, grease, and especially water. It is adaptable to any size or shape, and is ideally suited for every bearing application from log hauls to calender roll necks.

Investigate. Let our engineers show you how to apply Ryertex to your particular suction cover and bearing problems. Write for further information on any phase of Ryertex.

JOSEPH T. RYERSON & SON, INC.

Ryertex Division, Chicago and New York

RYERTEX BEARINGS

Pulpwood Production Tools

M. H. COLLET, Forest Engineer
West Virginia Pulp & Paper Company

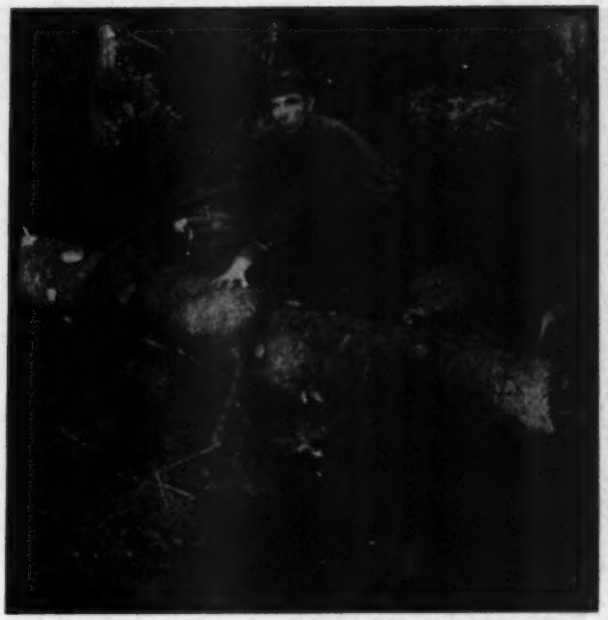


Fig. 1—The metal bow saw, a hand tool used for preparing pulpwood (blind pulpwood cutter with dog in foreground)

▶▶▶ THE OLD PROVERB "The workman is no better than his tools" has no greater application than in the field of pulpwood production. Proper selection, care and use of tools always has been important to the pulpwood producer and operator and, with the advent of mechanical equipment in the woods, pulpwood tools and their use today have taken on greatly increased importance.

Pulpwood is a raw material with a comparatively low unit value and a large bulk. Unlike saw logs, veneer logs, poles, piling, and many other forest products, the individual units handled (the sticks) on the average are small, and have a low and sometimes negligible, individual volume and value. In aggregate, however, the production of pulpwood sticks looms large. Last year, for example, in spite of war stringencies, we produced 15,350,000 cords of pulpwood in the United States and imported an additional 1,650,000 cords from Canada. Assuming, for purpose of illustration, an average price of $15.00 per cord, f.o.b. mills, this means that pulpwood in 1944 was at least a 265 million dollar business in this country.

To the producer who cuts and handles this wood, to the operator who manages its production, and to the dealer who organizes its collection and distribution, the expeditious handling of pulpwood in all the various stages of production is of utmost importance. And the proper use of good tools, whether they are hand tools or power tools, is, of course, the key to efficient production.

Hand Tools

In spite of the fact that we are living today in the highly mechanical Twentieth Century, with its jet-propelled aircraft, radar, and atomic bombs, the bulk of the 15,350,000 cords of pulpwood produced last year in the United States was prepared by hand tools—the axe and the saw. It is also true that hand tools will be used to prepare most of the pulpwood going to United States pulp mills this year. In fact, we can probably look forward to hand tools remaining important production equipment in all producing areas where farmers and small timberland owners are important sources of pulpwood supply.

Although at first consideration hand tools might seem out of place in our mechanical age, still the pulpwood industry in many sections of the United States should not consider the continued use of hand tools an impediment to securing efficient pulpwood production. A skilled and efficient woodsman in the Lake States or the Northeast can readily demonstrate production accomplishment with axes, woods saws and peeling tools, which compares very favorably with present production from mechanical equipment. It is not unusual for a skilled woodsman in these regions, working with well maintained tools in commercial timber stands, to fell, limb, buck, and rank two cords of pulpwood per day, or to cut, peel and rank one and a quarter cords per day. While in general we cannot expect the farmer or casual wood cutter to attain these production standards, such production with hand tools is proof that there exists a large field of development for improving the efficiency of the farmer's efforts.

Much can be done by the industry and by government agencies working through educational methods to introduce good quality axes, saws, peeling tools and other simple woods equipment into important farm pulpwood producing areas. Likewise, the pulpwood industry, through its field organization and through public agencies, can teach the non-professional cutter how to take proper care of his tools so that he can produce a maximum amount of pulpwood with a minimum amount of effort. The farmer also needs coaching on the proper methods of laying out his woodland for cutting and guidance in the most efficient manner of preparing his pulpwood for market. The farmer, casual woodsman of yesterday, in far too many instances, took his rusty axe and dull saw from a corner in the barn and, together with hired hand or son, went out to the farm woods and, with back-breaking effort, cut a few cords of wood. If we can get this farmer to use the same type of intelligent care and skill in selecting and using his pulpwood tools as he does with his other farm equipment, we should be able to show him how to make more profit with less effort. This would benefit the industry greatly by eliminating some of the inefficiencies in pulpwood production, which in turn would add a stabilizing factor to our pulpwood supply, and thereby tend to minimize fluctuations in pulpwood prices.

Fig 2—A mechanical circular saw being used for felling pulpwood

Within the last two decades, a hand tool of unusual merit has been introduced widely in the United States and Canada. This is the metal bow saw or bucksaw; a Swedish invention. The bow saw has a tubular, metal, bucksaw frame and a fine, tapered blade, resembling the blade of a band saw in a planing mill. The bow saw is now in general use throughout the Northwestern and Lake States Regions of the United States and it is considered standard pulpwood producing equipment throughout Canada. During the last few years, the bow saw has also made substantial, initial gains as a hand tool in the Appalachian Region and in some parts of the South. The bow saw's light weight, simplicity of design, low cost, and the fact that it is a one-man felling and bucking saw, make it an ideal hand tool for the farmer as well as for the professional pulpwood cutter. With the production records it has piled up wherever it has been used, the bow saw some day is bound to have a ranking role as a pulpwood hand tool in all the Eastern Regions of the United States.

In addition to a widespread use of general hand tools by the farmer producer, we are also certain to see a continued wide field of use for good hand tools on commercial pulpwood operations in many sections of the country. Rough terrain and low per-acre timber stands represent operating conditions which will always mitigate against mechanization. In such areas, which are typical of many parts of the Northeast, Lake States and Appalachian regions, the axe—either double or single bitted—and the saw—either cross-cut or metal bow saw—will remain important pulpwood production tools for many years to come. This is logical and probably desirable when we consider that such tools have a very low initial cost, are simple to maintain and operate, and have an extremely high degree of flexibility and mobility.

Mechanical Power Tools

During World War II, there was a widespread introduction of mechanical power equipment in pulpwood production. Such mechanical equipment ranged from power-driven chain and circular saws to tractor sulkies and pulpwood mills, and in some cases, even to barking machines and slasher-saw equipment. The impetus for increased mechanization came largely from the nation-wide labor shortage arising from the war. Throughout the war period, power equipment was brought into the woods on an expanded scale to offset the steady loss of woods labor.

Probably the greatest advance made during the war by any single class of equipment was that made by the gasoline-driven power saws, both circular and the chain types. Between Pearl Harbor, December 7, 1941, and V-J Day, September 2, 1945, it is estimated that the pulpwood industry added 1,000 chain saws and 5,000 circular saws to its tool kit. It is worthy of note too that these units of equipment were acquired during a period when all types of machinery were extremely critical and at no time during this period were the machine manufacturers able to fill the industry's full demands for mechanical equipment.

In addition to the power-driven chain and circular saws, the war also brought about a widespread introduction of crawler and wheel-type tractors and lightweight logging sulkies. The lighter crawler tractors of 20, 35 and 60 horsepower, equipped with power winches, have turned in some remarkable production records during the war and are definitely in the woods to stay, especially in rolling or mountainous country. In many areas, the light logging sulky, an adaptation of the Western logging arch, has been used with considerable success for skidding or dragging tree lengths, logs, and even pulpwood sticks over rough woods terrain. Since the logging sulky increases markedly the carrying capacity and skidding speed of tractor equipment, it fills a much needed role in pulpwood production. In the Southern flatwoods country and in all areas where level terrain exists, the wheel type agricultural and industrial tractors have found a fertile field of use. While much progress has been made in the use of wheel tractors for skidding in the South, there still remains a big field for development. Today in fact, one of the biggest, potential, equipment fields lies in the development of a rugged, low-cost, high-speed, skidding unit, possibly a combination wheel-type tractor and logging sulky, for skidding or hauling pulpwood from stump to truck loading point in the woods.

During the war, a number of models of pulpwood mills were developed and have been given intensive use. These mills range from very simple rigs, that could be set up and moved in a matter of minutes, to extremely heavy and complicated units resembling portable saw mills, that require as much as a week to move from one setup to another. Most of these pulpwood mills embody similar, fundamental features: (1) a log feed—either a cart, or dolly, or power fed rollers, or a conveyor chain; (2) a cut-off saw—operating in a vertical plane; and (3) a conveyor —for loading the cut wood directly onto a truck, or placing it in a temporary storage pile.

Several of the pulpwood mills are only slightly portable, requiring much time and effort to move from one set to another. On the other hand, a number of the mills are highly portable; considerable ingenuity having been used in mounting the mills on trucks, providing the mills with wheels for towing behind trucks, and in mounting the mills on wheel-type tractors. Where the mills have been mounted on tractors, the tractors not only provide mobility, but also furnish power for operating the conveyor, the saw, and the log loaders. On most logging operations the mobility feature of the pulpwood mill is an important

one, because the mills rapidly process the timber within economic skidding distances from each mill set, and, therefore, must be moved every few days to a new location. The ease with which they can be moved from one set to another and the time required for making these moves is highly important, considering that from ten to twenty-five men are normally required in a woods crew working in conjunction with the pulpwood mills, and that the production of the entire crew is usually lost between mill setups.

Some of the pulpwood mills show considerable promise and represent a new approach to the old problems of cutting wood cheaper with less effort. The obvious advantages of these mills lie in the fact that they minimize the amount of muscular effort involved in bucking and loading pulpwood, since they utilize mechanical power to cut the wood in pulpwood lengths and to place these lengths on trucks or in convenient storage piles. The major problems involved in securing efficient and low-cost production from the pulpwood mills arise from the close controls and supervision needed to keep the mills running at or near their capacity. Any mechanical failures of the mill itself, in ability of the woods crew to supply the mill with logs or tree lengths, or failure of the crew or trucks to take away the finished products in the form of pulpwood sticks, means a loss of valuable production time and consequently high-cost pulpwood.

One of the hardest jobs in pulpwood production is the loading of pulpwood on trucks, railroad cars or storage piles. During the war years, it was particularly difficult to get labor to handle the loading of pulpwood and, as a result, various mechanical loaders were developed, all with the single objective of minimizing labor requirements. Some of the mechanical loaders have done a good job of accomplishing this objective, while others, in spite of the employment of gasoline engines and mechanical principles, actually offer little to offset the labor requirements in pulpwood loading. Many workers, after short experience with some of the loaders, have set aside the mechanical equipment and have returned to hand methods. In general, the mechanical loaders are of two types:

a) a conveyor chain running in a trough which carries the pulpwood sticks lengthwise

b) a pair of chains or cables fitted with attachments, which carry the sticks crosswise in a horizontal position.

These conveyors have been made mobile by mounting them on trucks, tractors and towing wheels. In a few cases, the conveyors were designed so that they could be hooked on the rear of a truck and powered by a take-off from the rear end of the truck.

Fig. 3—A mechanical chain saw being used for bucking pulpwood

Two new loaders have been placed on the market within the last few years, which do not employ the conveyor principle. One operates as a single stick elevator with two supporting arms carrying a stick from the ground to a shoulder-height position, with the empty arms returning to the ground through the same arc, a gasoline engine supplying the motive force. The second loader employs an ingenious combination of the crawler tractor and hydraulic rams to operate an arm-like arrangement which loads a cord of eight-foot pulpwood from a rank to a truck, or from truck to rank. This loader also can be used to skid its load of wood short distances in the woods or yarding grounds. Neither of these loaders has had a sufficiently wide introduction or long enough period of use to judge properly their practicability.

One of the most tedious and disagreeable jobs in the woods today is that of peeling pulpwood. Mechanical equipment for peeling in the woods has shown very little development over the years and by far the bulk of all peeled pulpwood is produced today by hand methods. Two types of peeling machines showing some real promise of success have recently been placed on the market by equipment manufacturers, i.e., the hydraulic streambarker and the hammerbarker. The streambarker, which utilizes the principle of a high velocity water jet for stripping the wood of its bark, has been used by a number of mills during the war for removing bark at the mill. While the present streambarker equipment is probably too heavy and complicated for general woods use, this is no reason why the hydraulic principle of barking wood could not be employed in the woods at concentration points, where sufficient volume of wood can be brought together, and where electric power for pumping and an adequate water supply for operating the water jets is obtainable. Lightweight metals and improved pumps should make it possible to lighten-up this equipment in the postwar period. The second type of mechanical barker employs the hammer principle. This machine, through the use of rapidly moving hammers, knocks the bark from the pulpwood sticks. The new hammer-barkers, which weigh approximately 8½ tons, are mounted on truck wheels and are sufficiently mobile that they can be used at various locations in mill yards and at concentration yards under satisfactory operating conditions.

Chipping pulpwood in the woods has long been a dream of many pulpwood and paper mill operators. While chipping pulpwood in the woods for paper use is still in the dream stage, a number of building paper mills have found it feasible within the last few years to install chipping equipment right in their woods operations. These chippers are high-speed, multi-knife units, powered by Diesel and Diesel-electric equipment. The chips naturally include the bark which is not objectionable to building paper mills. The transportation problem from the woods to the mill becomes one of chip movement rather than cord-wood

Fig. 4—A mechanical pulpwood mill used for bucking and loading pulpwood

movement for these installations.

Within the last decade, at least two pulpwood mills in the South have installed slasher-saw equipment at their mills. Log-length wood is brought to the mills, either by railroad car or by truck-trailer equipment, and after being either scaled or weighed, the logs roll on to the slasher, where each log is broken down in a single, simultaneous operation into three or four pulpwood sticks. From the slasher, the sticks move directly on to conveyors and thence to the chippers.

Many important pulpwood production tools and problems are found in the wood yards at the pulp mills. Generally speaking, few mill yards are laid out properly for the efficient handling of pulpwood. The equipment and the methods of handling wood in mill yards often add considerable unnecessary cost to the production of pulpwood. The pulp and paper industry has been outstanding in its application of engineering and scientific principles to the manufacture of pulp and paper. In the future, this industry should make certain that it employs the same engineering principles in wood production and wood handling that it employs in pulp and paper manufacture, for the application of scientific principles ahead of the woodpile is the only way the industry can make certain that their wood costs and also the costs of their finished product are held at the lowest possible level. An excellent place for the industry to initiate the adoption of engineering principles would be in the mill yards, for it is in the mill yards that we find the largest concentration of wood, and therefore, the place where mass production principles should have their best application.

The hauling or transportation of pulpwood is another big field, calling for equipment and technique development. Many individuals engaged in pulpwood hauling have, on various occasions, lamented the type of trucks available for transporting pulpwood from the mills to railroad siding, stream-bank or mill. Recently the American Pulpwood Association, in conjunction with the pulpwood industry, has sought the improvement of trucks for pulpwood production and has recommended to truck manufacturers some of the changes needed in present commercial truck equipment to make it more suitable for pulpwood hauling. Generally speaking, these changes involve the strengthening of the truck frames and bodies, the elimination of the gingerbread and fancy trim on the trucks, the increase of the power provided in the trucks, with some sacrifice in road speed if necessary to secure the additional power, and the protection of the front end, motor and exposed, vulnerable underparts of the trucks by the installation of protective guards.

While the industry to date in all regions of the country, except the Pacific Northwest, has depended almost entirely upon trucks equipped with standard gasoline motors, there appears to be no reason why Diesel equipment should not have a wide field of use in hauling pulpwood in the Eastern Regions of the United States. Diesel equipment normally provides 30 per cent greater power and 50 per cent more efficiency than gasoline equipment, and since power and economy are primary factors in pulpwood transportation, it would seem that Diesel equipment, sooner or later, is bound to break into the pulpwood transportation field.

In considering truck transportation as a pulpwood tool, it also is important that we consider the layout and quality of woods roads as a production tool. It is estimated that over 90 per cent of all the pulpwood produced in the United States moves by truck some distance over woods roads in its journey from stump to mill. In most instances, these woods roads are poorly located and usually, for limited distances near the stump, they are of extremely low standard. R. R. Reynolds, in trucking studies at Crossett, Arkansas, has shown that in his locality the costs of hauling pulpwood with standard 1½-ton truck equipment increase from ten cents per round trip mile, when hauling on gravel or hard surface roads, to thirty-two cents per round trip mile, when hauling on unimproved woods roads. D. M. Matthews, of the University of Michigan, has shown that it is possible to determine by engineering principles and mathematical formulae the proper road spacing, and the allowable costs of woods roads. Intelligent woods operators are considering more and more that woods roads are one of their most important production tools, and are beginning to apply engineering principles in locating and constructing these roads.

In mechanical pulpwood operations, probably the most important production tool of all is the foreman or woods boss, who lays out and supervises the mechanical woods job. Mechanical equipment must be properly selected, cared for and used, if efficient and low-cost wood production is to be secured. The man having primary responsibility and control over this equipment and of the woods crews using the equipment is the woods foreman. To perform his job with skill, he must have a thorough understanding and working knowledge of: (a) production methods; (b) the construction, operation and maintenance of his mechanical equipment; (c) job training; (d) relationship between stand volume and road costs; (e) operating costs and (f) the proper movement of equipment from one set to another. Where such skills are required, pulpwood production presents a large, fertile field for young men with forestry-engineering training or experience. During the war, the lack of good woods foremen was probably the greatest, single factor which retarded the mechanization of woods

(Turn to page 1209)

Some Observations on the French and German Paper Industry

OTTO KRESS, Technical Director
The Institute of Paper Chemistry

▶▶▶ BASED ON FIGURES supplied by French sources, the French paper industry, prior to 1939, produced an average of 1,200,000 tons per year and used 1,000,000 tons of coal, 443,500 tons of chemical wood pulp, 352,600 tons of mechanical wood pulp, 27,000 tons of straw pulp, and approximately 400,000 tons of rags and wastepaper. Of the wood pulp, 468,000 tons were imported and 361,000 tons were manufactured in France. Large amounts of pulpwood were imported, also, but the importation was to some degree a result of lower cost, both of imported wood and of imported pulp. During the German occupation, the production of paper dropped from 1,200,000 to 200,000 tons annually, and it has dropped lower since liberation.

In 1939, there were 361,500 tons of pulp manufactured in France, which were divided between the different grades as follows:

	Tons
Mechanical	236,000
Sulphite	60,000
Kraft or soda	38,500
Straw and other grades	27,000

A large percentage of this capacity still is intact. In the case of kraft and soda, the productive capacity actually has increased and could be increased decidedly as soon as the equipment, which was partially installed during the German occupation, is ready for operation.

The French paper industry has suffered mainly from lack of coal, transportation (through the breakdown of the railway system and lack of trucks, tires, and gasoline), and imported pulp and wood. Domestic wood is difficult to secure because of lack of transportation. The labor situation, in general, is good from the standpoint of available employees. The labor rate throughout France (in all continental Europe, in fact) is very low in comparison with the United States.

The French paper industry is centered in small areas as follows:

1. Northern district, located near the coal mines and ports of importation.

2. Vosges area, located where hydraulic power and wood are available.

3. Grenoble district, located where hydraulic power, coal, and wood are available.

4. Rouen district, located near importation ports.

5. Paris area, representing the largest center of consumption.

6. Landes district, area of maritime pine planting, and location of the French kraft industry.

7. Pyrenees district, an area in which there are located small mills especially adapted for the manufacture of cigarette and other lightweight papers.

Chemicals are available in France, salt cake being obtained from Bayonne or Lyons for the kraft mills in the southern Bordeau area. These chemicals are by-products of the chemical industry.

Lime is produced close to the mills, but coal is derived from a source approximately 100 to 120 kilometers from the mill.

The French kraft industry, which had a production in May of 41,400 tons per year, consisted of four kraft mills that, from the actual building standpoint, were very well constructed and of a size which gave the impression of having capacities several times their present production.

The wood used is the so-called maritime pine, which originally was planted in this area to prevent soil erosion. The wood is quite similar in its characteristics to loblolly pine, but it can be stored for a period of three years and, fortunately, as reforestation is practiced, the wood grows closely adjacent to the mill. Practically all of the wood, as it is received, has been turpentined.

Turpentining is carried on by cutting a narrow strip on four sides of the tree to a height of from 12 to 15 feet and about four inches wide, the turpentine being collected in earthenware cups. According to the mills, this method of turpentining has been in use for a great many years in southern France and supposedly anteceded the cupping method into the United States.

Wood handling at the mill is rather crude in that no barking drums are employed, and the bark is removed by knife barkers, which is extremely wasteful. There was no evidence of power equipment for the splitting of wood bolts too large for the chipper. These were cut into smaller pieces by means of a bandsaw.

The digesters are equipped with outside circulating systems, the washing being conducted by diffusers. All the mills save turpentine and tall oil and, in view of the gasoline shortage, turpentine was used as a motor fuel.

All the mills are equipped with, or are installing, modern spray furnaces with a Cottrell type of electrical precipitator. The mills are equipped with lime burners and, presently, in view of the general fuel shortage, they are operated by means of producer gas made from wood. The paper machines are relatively narrow and operate at low speed. All of the machines are equipped with a Yankee dryer in the dryer train.

From the standpoint of formation and test, the papers are excellent, but production is far below American standards.

The kollergang is used almost universally, both for pulp preparation and for the reduction of wastepaper, which is used very extensively. The treatment in the kollergang is approximately two hours, the stock being approximately 30 per cent dry. The final stock preparation is completed in beaters.

The Thorsen-Héry beater is used extensively, but many rather abnormal beaters are noted, such as those with multiple rolls; the use of pumps or paddles to assist in travel of the stock is quite common. Jordans and Claflin refiners are used only to a very minor extent.

Some of the kraft mills have modern converting equipment for the production of spinning paper, bags and sacks, and corrugated and solid fiber containers.

The sulphite industry is limited to four mills of which the mills at Schweigenau and at Calais have been destroyed, but the mills at Rouen and Strasbourg are in good operating condition.

Peculiarly, the sulphite mills obtain pyrites largely from either Greece or Spain. In looking into the situation, it was found that close to Lyons there is a very large pyrites mine in opera-

tion which had some 60,000 tons of pyrites above ground which ran from 40 to 45 per cent sulphur.

Similarly, the mills making higher grades of paper largely imported talc from Spain, even though there are numerous good clay deposits in France.

In place of pyrites, the mills have also used a high sulphur content artificial pyrites obtained from the treating of coal gas with iron oxide to remove sulphur.

What has been said about the French kraft mills also could be applied, in general, to the French paper industry making other grades of paper in that they produce, at relatively low speed on narrow machines, papers of beautiful formation that are artistic rather than representative of a high productive industry. In view of the strong cartel under which the paper mills operate, the production of these high-grade papers on a relatively low volume basis can be understood more readily.

There is a box testing laboratory in Paris which has a drum tester and a few other pieces of equipment that were installed based upon American practice. However, the laboratory is poorly equipped and, in general, the container industry has not begun to make inroads in shipping in comparison with the American paper container industry.

Similarly, the manufacture of duplex asphalt paper is relatively a very minor industry, operating at extremely low speeds and production in comparison with American practice. As no asphalt was available, in view of the lack of importation and failure to receive crude oil for refining purposes, a substitute made of coal tar and anthracine oil was used. This was very unsatisfactory from the standpoint of bond, oil stain, etc.

German Industry

None of the mills which the writer saw were in operation. These mills were in territory that had just been occupied by the American Forces. There was ample opportunity to see the mills, many of which were destroyed completely from an operating standpoint. A special effort was made to interview mill managers and trips were made to localities where some of the prominent technicians were residing.

Many of the German mills, such as those located at Düren, Julich, and Muenchen-Gladbach, which were in direct line with the Allied invasion, have been destroyed completely both by bombing and by fire. The same applies to the cities. Other mills located farther south in the Mainz area, for example, were spared, in part, from either bombing, artillery fire, or incendiary fire bombing.

In general, the German paper industry appeared to be far more modern than the French industry, in so far as equipment is concerned. Although many of the mills were old, with antiquated equipment, they produced excellent papers from the quality standpoint. The more modern mills had good equipment, but the speed and productive capacity were not comparable with American practice.

The opportunity presented itself to confer with certain German experts such as Dr. Freudenberg, Dr. Brecht, Dr. Jayme, etc. From these interviews and from personal observations at the mills, the following are some of the contributions of the German industry during the war period.

Naturally, sulphite waste liquor is utilized for the production of adhesives and the various other uses for which it is employed in the United States. However, in view of the shortage of raw materials, the Germans have progressed in the production of alcohol and yeast. Yeast is used both for domestic food purposes and for cattle food; in the latter case, it was used to the extent of 300 grams of yeast per day per animal in admixture with other feed. The general process of manufacturing alcohol is about similar to what has been practiced in the United States except for details. However, the general process used in manufacturing yeast may be of interest.

The German mills cook their sulphite pulp in stationary digesters, many of which are arranged so that the pulp is not blown but is drained and washed in the digester similar to the Mitscherlich practice in this country. The combined sulphite waste liquor, running from 8 to 10 per cent solids, is neutralized to *p*H of 5.5 by a hydrated lime suspension, allowed to settle, and the settled material is rejected. Ammonium sulphate and calcium superphosphate are added to the clear liquor for food purposes, and the liquor is cooled by spraying it into a cooling tower filled with wooden blocks, the sides of the tower being open to the air. The object of this is to cool the liquor, as the ideal temperature for the production of yeast varies from 34 to 37 C.

The growing of the yeast occurs in a tiled vessel in the outer edges of which there is a stainless steel coil through which water can be circulated to maintain the proper temperature. The liquor is inoculated with the yeast organism and, when the yeast has grown properly, the liquor is passed through a specially developed centrifuge to separate foam; from here it passes through another centrifuge similar to a cream separator with a capacity of 3 cubic meters per hour to produce a liquor of 8 per cent yeast content. If the yeast is to be used for human consumption, it is diluted to 2 per cent with clean water and again centrifuged for washing purposes. The suspension of yeast is now passed over a vacuum filter, producing a product of 35 per cent yeast content. This material is sprayed into a chamber, hot gases being introduced to produce a dry product of 50 per cent protein content.

The German technicians spoke highly of a tanning agent made from sulphite waste liquor through the condensation with 4.4 feet dihydroxydiphenyl sulphone and formaldehyde.

Stream pollution is extremely important in Germany and, although the writer did not see the Romain process for handling the waste from yeast and alcohol manufacture, which supposedly is established at Lenzig, near Salzburg, we were told that these waste liquors are concentrated in a triple effect evaporator and burned successfully in a furnace of the Tomlinson type.

There was considerable talk of the process developed in Germany for the manufacture of glycerin and glycol through the reduction of cellulose by means of hydrogen at a temperature of 160 degrees and at high pressure. No detailed information could be obtained covering this process.

At Wolfen, near Berlin, nitric acid is available as a by-product from a chemical plant; this is used for impregnating chips with 10 per cent nitric acid in the cold. After impregnation, the liquor is withdrawn and the chips are heated to 90 degrees in a special stainless steel vessel. The pulp, after treatment with caustic soda and bleaching, has an alpha content of 98 per cent and is particularly suited for the manufacture of acetate and cuprammonium silk.

The German pulp industry operates largely on spruce and beechwood. The latter wood is converted to pulp largely by prehydrolyzing the chips in a pressure vessel with 2.5 per cent sulphuric acid for a period of four hours. The free liquor is withdrawn, neutralized with lime, and fermented to produce yeast. The wood residue from the hydrolysis treatment is washed, pressed for water removal, and cooked by the kraft process to produce a pulp of 96 per cent alpha content.

Inquiries regarding the value of the

soda-base sulphite cooking process indicated that all experiments in Germany to utilize this process with an economical recovery of the soda-base had failed. In view of the supposed success of this process in Norway, this comment was rather interesting.

From interviews with various experts, it developed that solvent extraction processes of various types, such as the butanol process, were not in successful operation in Germany.

Lignin plastics were of comparatively little interest in view of their failure to produce a waterproof product.

Lignin for iron removal in the treatment of water by base interchange appeared to be of decided interest.

As Germany was prevented from all importations of sisal, hemp, etc., it was natural that twisted paper should be produced in large amount for twine, sack purposes, textiles, etc. A supposedly successful binder twine was manufactured, the paper representing a lightweight sheet to which a wet strength and preservative treatment had been given, the twine being specially waterproofed.

One of the projects that appeared to be of most decided interest and which had been financed heavily by the German government, was the study of a hybrid poplar which was of such rapid growth that from eight to ten years were required for the production of an eight-inch tree. This hybrid poplar also is of interest in that it shows a cellulose content up to 50 per cent. As the German forests are grown entirely under a very careful reforestation program, this wood was of particular interest for the manufacture of veneer and matches, for pulping, and other uses.

The writer heard repeatedly that Germany was using largely unbleached sulphite of an alpha content of 80 to 90 per cent for the production of nitrocellulose. This statement was so radical in comparison with American ideas that it was checked repeatedly in various interviews, all of which confirmed the German statement. It was stated that the resulting nitrocellulose is particularly stable and the thought was expressed that a pulp of this peculiar nature could be nitrated and washed more readily than an ordinary high alpha-content pulp. It is known that, during the war period, an unbleached southern kraft pulp of rather low alpha content, such as we normally would consider suitable only for the production of unbleached kraft paper or a semibleached pulp, was used in England for the production of nitrocellulose. It is barely possible that, during the war period, the explosive was not manufactured except for immediate use, and that none of it was stored for any appreciable period of time; therefore, deterioration on storage was of minor importance.

The writer saw very little of the above from an actual operating standpoint for, as indicated, the mills were shut down. Most of the information was obtained from interviews with various experts who, however, agreed in their comments on the above developments.

In general, whereas German research from a theoretical standpoint is unquestionably of a very high order, the mills did not impress the writer from the standpoint of equipment and from general operating conditions as could be developed through these various interviews.

As far as the educational institutions are concerned, the papermaking school at Grenoble, France, is entirely intact and has suffered no war damages. The famous Techniche Hochschule, at Darmstadt, was practically ruined through bombing and fire. Many of the German universities, such as the University of Bonn, were completely destroyed. Heidelberg is intact, for the Germans evacuated the city, and, aside from destroying the bridges over the Neckar when they evacuated Heidelberg, no damage was done to the city. The University was taken over by the American Service and there was no session for higher education.

It was natural that many German scientists migrated to Heidelberg in view of its physical condition and the university atmosphere which exists in that city. Therefore, it was possible to interview a number of men through one visit.

Since the writer returned to the States in May, 1945, several other commissions have been in Europe to interview German scientists, to visit plants, and to study research records. No doubt, this information will be made available in due time.

Pulpwood Production Tools

(Continued from page 1206)

operations and the basic reason why many mechanical woods operations show higher costs than hand operations. Since the woods foreman is an important, controlling factor on mechanical woods operations, a goodly number of them must come into the production picture before the full value and potentialities of woods mechanization will become possible.

Conclusion

The solution for efficient wood production is good tools properly maintained and used. Hand tools have played an extremely important role in pulpwood production in the past and in all probability will remain important production tools in many areas in the future. Mechanical power tools, of many types, have been introduced widely in the pulpwood industry during the war period. Power tools were employed principally in the woods during the war, in an effort to offset the widespread woods labor shortage. By and large, the power tools have proved themselves to be labor saving devices and have assisted admirably in sustaining the pulpwood supply of the 207 pulp mills in the United States during the war period of critical manpower shortages. In the postwar period, mechanical equipment may be employed by the industry on a steadily increased scale, in an effort to make woods labor more productive and thereby sustain minimum production costs in the face of increasing hourly labor costs. However, in the past, the cost savings in the use of power tools over hand tools have not always been favorable and many power tools are bound to lose ground during the postwar period, unless the tool manufacturers can come out quickly with some long needed improvements, and the quality of woods foremanship can show an early improvement for the better. On the other hand, the pulpwood industry and the tool manufacturers are sure to improve both hand tools and power tools in the years to come, and improved tools, which show definite production cost advantages, are certain to receive wide acceptance and employment in the industry.

The principles of mass production, perfected by the American automotive industry, and to date employed but sparingly by the pulpwood industry, are predicated upon efficient production tools. There is a crying need today in the United States for improved efficiency in pulpwood tools and pulpwood production methods, so that the industry can employ more mass production principles. This need must be filled if the United States is to maintain its competitive position in pulp and paper manufacture with the rest of the world, and at the same time maintain and improve the living standards of its workers.

Reconditioning Paper Mill Felts

DR. R. W. MITCHELL, Technical Director
Magnus Chemical Company, Inc.

▶▶▶ IN SPITE OF their key function in paper production, felts are still being treated with much less respect than they deserve in many a mill. Not only is insufficient attention being given to keeping them in proper condition for high speed operation over a long period of service life, but cleaning materials are still in extensive use which are incapable of doing a good cleansing job and which considerably shorten effective service life in the bargain.

A paper mill felt is really quite a delicate thing. Loading up as it does with a highly varied assortment of fine fibres, fillers, colors, size, and other dirts, not to mention such special cases as lime deposits, pitch, and carbon black, it is easy to look upon the cleaning operation as being primarily a laundering proposition. But much more than the removal of solid dirts is involved. Water absorption being its major function, a felt must be soft and porous, with raised nap and without residues left in after washing due to inefficient rinsing (Figures 1 (a) and 1 (b)).

In other words, you should not merely clean a felt. Your objective should be as complete a reconditioning as possible.

There are a great many materials used for felt washing that are positively harmful. Such alkaline materials as soda ash and trisodium phosphate are still in use, though they are hard on a felt, directly attacking its tensile strength, while leaving it harsh and hard, with very little effect on restoring the nap. As a matter of fact, far too many mills still use various soap powders for felt washing, in spite of the fact that it is virtually impossible to rinse them out thoroughly, with the result that a felt is actually partly loaded at the end of the washing operation, with its porosity impaired and a most effective basis for fast building up of a load established. Where hard water conditions prevail, these unrinsed soap residues build up deposits of insoluble lime soaps which are extremely difficult to remove.

For adequate reconditioning of felts materials are needed which will penetrate into the dirt load quickly and easily, loosening all embedded dirt so that it will rinse out readily and completely, *without any harmful effects on the wool fiber of the felts.* These materials should not only put as much of the dirt as possible in a condition that will make it effectively removable with rinse water, but they must be rinsable readily in themselves, so as not to leave a deposit of their own behind them. Moreover, they should have a specific action in lifting the nap out of its matted and pressed-down condition so as to bring it back into as near its original condition as possible and thus restore its absorbency.

Modern technology has developed a considerable range of felt reconditioning materials so that these desirable features of cleaning and restoration are obtainable on any basis the mill operator desires—whether he wants to clean his felts on the machine, or off; whether he makes it a practice of treating felts with conditioning materials during operation to slow down the loading effect, or whether he has special problems in the removal of lime deposits or other special dirts.

Reconditioning Felts on the Machine During Shutdown

Alkaline-Wetting Agent Type of Conditioner—One of the most widely used materials for this purpose is a mild, highly penetrative material which has no destructive or weakening action on wool fibers. It is a free-rinsing material, made up of a synthetic wetting agent and added salts to bring the *p*H of a 1 per cent solution up to around 10.6, which has been determined to be the most satisfactory for felt conditioning. Thus it provides the speedy penetrative properties of accelerated wetting action, with the emulsifying and deflocculating effects of alkaline action without any danger of harm to the wool. This wetting action also insures virtually perfect rinsing, so that cleaned felts have no residues due to ineffective rinsing and thus do not tend to load up as fast as those washed with materials with poor rinsing qualities.

This cleaner is commonly employed in a 1 per cent solution in water at a temperature of about 120 Fahr. preferably, although it gives satisfactory results with cold water. When felts

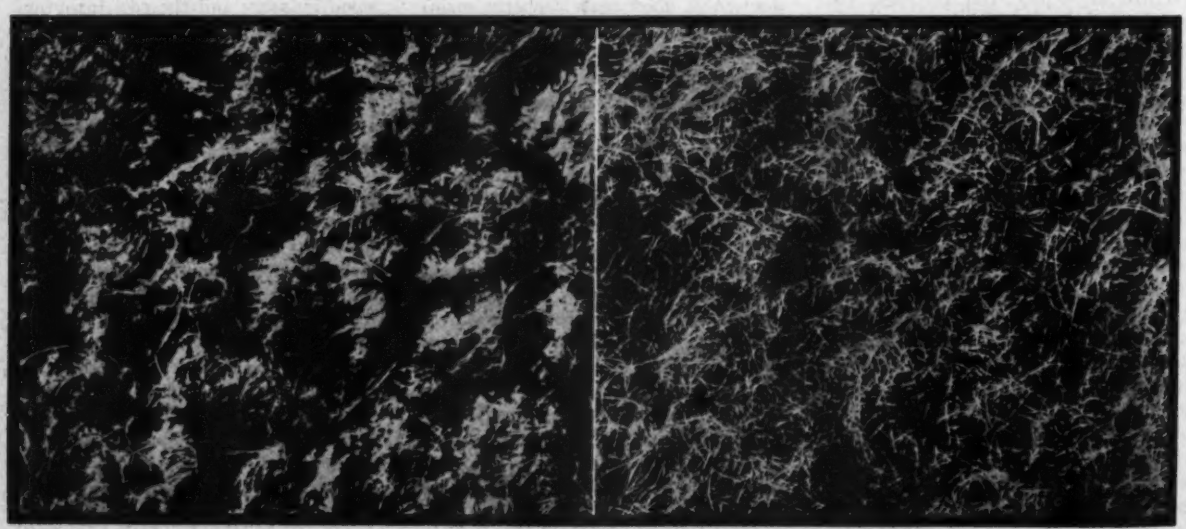


Fig. 1(a)—Loaded felt (left). Fig. 1(b)—Clean felt (right)

are cleaned on the machine, they are slacked off and saturated with the cleansing solution, preferably through showers, followed by rinsing with water through the showers (Figures 2 and 3).

Solvent-Soap Type of Conditioner—A second type of cleaner may be used for felt washing where the fillers used make necessary a soap content in the cleaning material. This material is made up of a very soluble, low titer soap, plus a solvent which insures speedier penetration and removal of certain load ingredients. Used for cleaning on the machine with felt slacked off, it gives very satisfactory results wherever the type of filler involved does not readily respond to a soapless type of cleaner. It does not have the disadvantages of regular soaps, in that it rinses off completely and speedily. It is normally used in 1 per cent solution.

Conditioning Badly Limed Felts

While the alkaline wetting agent type of cleaner is effective for the removal of normal lime deposits in a felt, there are conditions which call for a special type of cleaner. Where soap residues have led to a building up of a heavy content of lime soaps in a felt load, or where excessive hard water conditions tend to deposit a heavy lime load in a felt, no ordinary cleaner is capable of doing a satisfactory reconditioning job. These soaps and salts of lime must be dissolved by an acid if they are to be completely removed and the felt restored to good operating condition.

Acids, however, are never desirable materials to use around a paper machine, not only because of their hazards for personnel, but because of their corrosive action which can do great damage to machine parts. The answer lies in using an acid which has been effectively inhibited so that it will attack the lime deposits without the slightest danger of attack on metals. Such inhibited acid materials, utilizing weaker acids than sulphuric or muriatic which are fully effective in attacking lime salts and are suitably inhibited to prevent corrosive action on metals or danger to personnel, are most effective in de-liming felts. One of this type, provided in solid form and used in a 1 per cent to 3 per cent solution in water, at 160 Fahr., has proven to be satisfactory in every case where it has been used.

The cleaning solution of the solid inhibited acid cleaner is used for in-place washing as described above. Where this acid solution is used on the machine during washup or in a felt washer, it is advisable to follow its use with a security flush-through. This

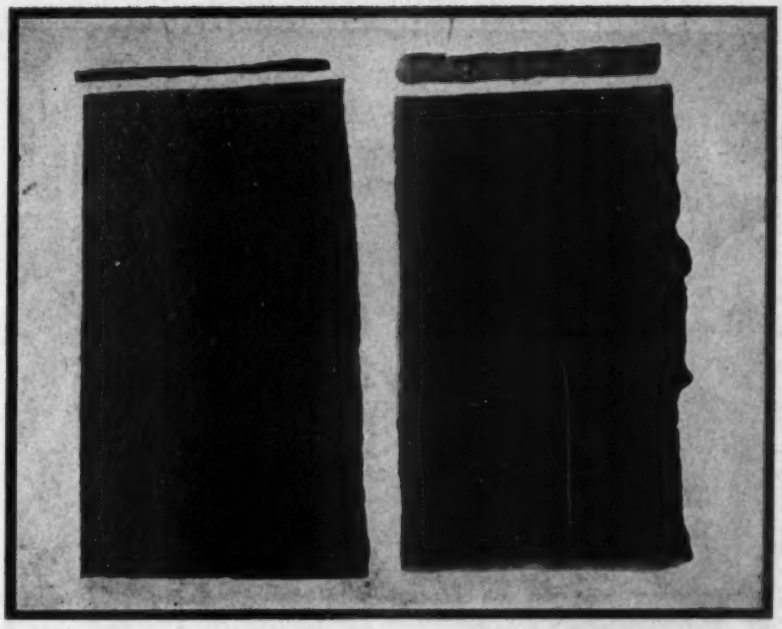


Fig. 2—Loaded board mill felt before (left) and after washing (right) with alkaline-wetting type of conditioner. (Note in cross section how much more open and porous the felt is after washing)

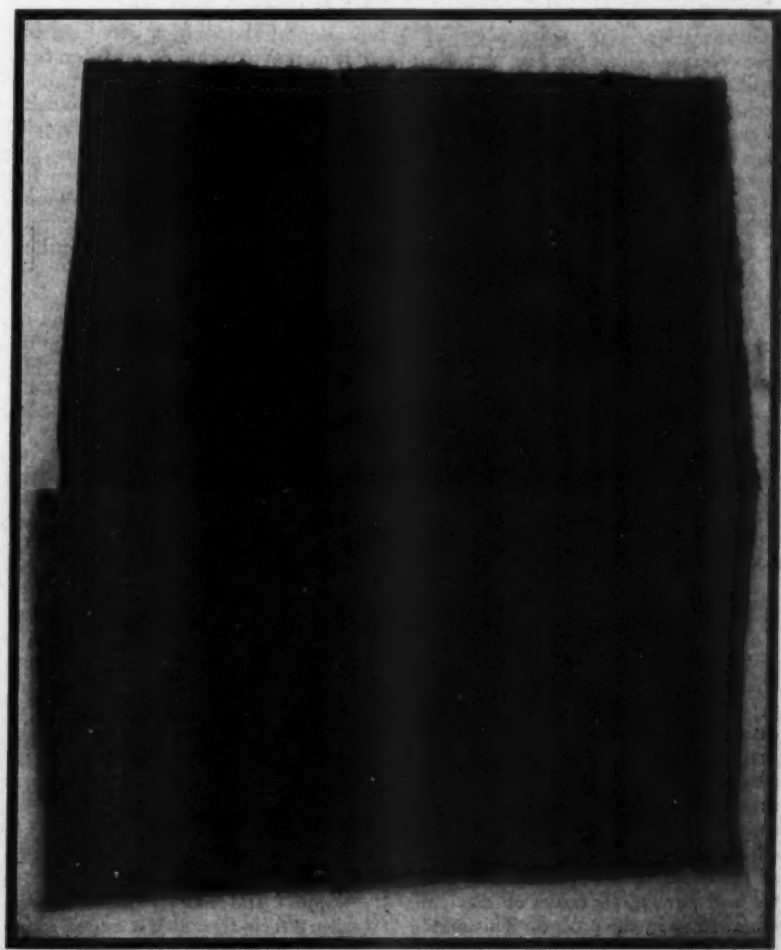


Fig. 3—Felt as used in making photographic paper, loaded with carbon black. Illustration shows before (top) and after (below) washing with alkaline-wetting agent type of conditioner

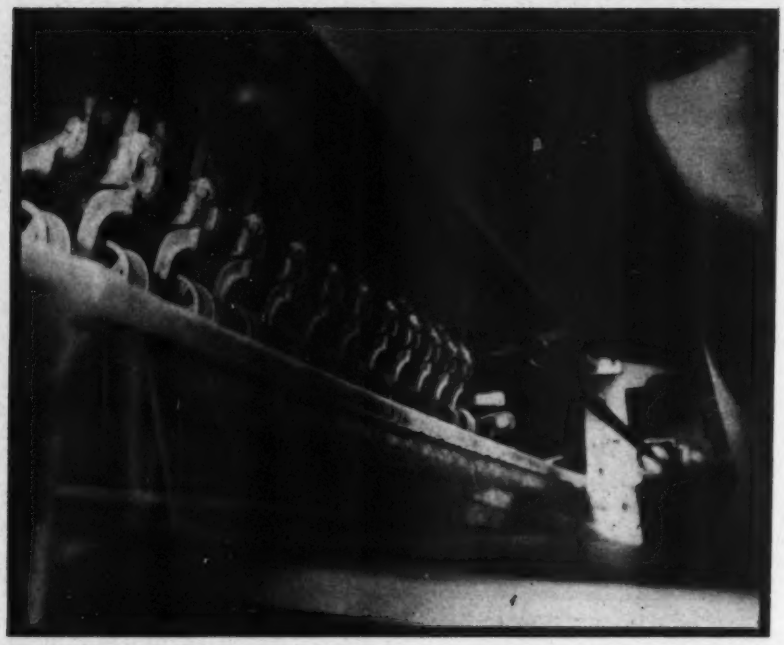


Fig. 4—Reconditioning felt with neutral-wetting agent type of conditioner while operating

neutralizes any traces of acid which may remain. Inhibition is perfectly satisfactory for the relatively short periods during which this type of cleaner is in contact with metals, but long continued contact may cause corrosion.

Cleaning Felts Off the Machine in a Washer

Any one of the three types of cleaners discussed above under the subject of reconditioning felts on the machine can be used in the same concentrations for washing felts in felt washers or soak tanks. Each type of material has such speedy and thorough action and such effective rinsing qualities, that felts are readily soaked or sprayed clean and completely rinsed with water to leave them soft, porous, well napped, and ready for another long period of service at a low rate of loading.

Conditioning Felts During Operation

Neutral-Wetting Agent Type of Conditioner—Conditioning on the machine can be accomplished by another type of felt cleaner in cases where it is desirable to avoid an alkaline condition. This cleaner is primarily a wetting agent, accomplishing its cleaning action by penetrating deeply and speedily into the dirt load and so loosening it from its bond with the fibers of the felt that subsequent rinsing water will remove all traces of dirt and lift the nap in the process. This material can be used to clean felts while operating the machine at full speed and without slackening off. The application of the solution may be either continuous or periodic. A 1 per cent solution from an overhead tank and pump setup connected to the showers is ordinarily used to condition the felt. When felts are thus conditioned on the machine, time lost from shutdown for felt washing is reduced to a minimum.

Routine application of the neutral, wetting agent type of cleaner during operation will assure complete uniformity in felts, eliminate hard spots and noticeably improve waterproofing, particularly on board stocks (Figure 4).

Breaking in Felts

The alkaline-wetting agent type of conditioner has an extensive field of use in eliminating the delays of the breaking-in period for a new felt. When a felt is wet with a 1 per cent solution of this material, just after it has been shrunk on, it is ready for service without breaking in. It will be found that this treatment promptly removes wool oil and puts the felt into full absorptive condition, and no difficulties are experienced with "blowing" and "ribboning." Pickup, particularly where the paper is transferred to the felt from the wire, is immediately as good as with a conditioned felt that has been in long service.

Holding Felt in Good Operating Condition After Shutdowns

More and more paper mills are treating their felts at the end of a run just before shutdowns to insure immediately perfect functioning when the machines are again put into operation. The Neutral-Wetting Agent Type of conditioner is highly satisfactory for this purpose. Felts are saturated with a 1 per cent solution of this material, which is left in the felt during the shutdown period. It can be applied by slacking off and soaking through showers or other sprays for a short period before shutdown.

Removal of Pitch Spots From Felts

In some mills, particularly those using sulphite stock, pitch spots cause considerable trouble. Nor do they respond to ordinary felt conditioning materials. For this operation a special type of cleaner is required—based on an alkaline cleaning material, but with strong solvent action added.

Where pitch spots are sporadic, common practice is to use a regular 1 per cent solution of the neutral wetting agent type of cleaner described above, to which the special solvent-type of cleaner is added in the proportion of one part to seven parts of the 1 per cent solution. This solution is poured over the felt at the points where pitch is giving trouble, but away from the showers. The felt loosens up as soon as it hits the shower and the pitch spots are completely removed.

Where there is a heavy pitch deposit, the showers are shut off and about twelve quarts of the concentrated solvent material are poured or spread on to the pickup felt right at the doctor. Then with buckets, water is slowly poured on this felt while it is moving, in just sufficient quantity to wet it. The felt is run from five to ten minutes under this condition and then the showers are turned on to wash away the loosened pitch, leaving the felt open, soft, and with a good stand of nap.

One precaution which should be followed in using this strongly solvent cleaner is to avoid contact of this solution with any rubber, particularly rolls. Otherwise a damaging solvent and swelling action will take place. Slight contact has no serious effect and even longer contact may have no visible action. But, to make sure, all rubber covered rolls which may have come in contact with this solution should be thoroughly hosed off after the cleaning job is done.

Summary

In general, the alkaline-wetting agent type of conditioner has the widest field of application in felt reconditioning, being capable of providing uniformally successful results on almost any type of paper from board mills to tissue and writing paper mills.

(Turn to page 1216)

Kimberly-Clark's Program for Re-employing Returning Veterans

M. J. SCHULENBERG
Special Assistant to the President
Kimberly-Clark Corporation

▶▶▶ THE PROGRAM DISCUSSED here has been used by the Kimberly-Clark Corporation for the re-employment of fifteen per cent of the company's 2,500 men and women who have gone into Service since May 1, 1940. The story of how the veteran returns has been prepared by the company for dissemination to the eighty-five per cent who are still in the service and for internal information as well.

Thus far, the company has placed all of its former employees whether the prewar status was that of a permanent or temporary employee—and has additionally employed scores of servicemen who were new to the organization. The company expects to continue absorbing veterans in the temporary and new categories, but the degree to which this will be possible has not been determined. Consequently, the bulk of the program addresses itself to permanent employee-veterans for whom positions are definitely promised. An incidental highlight experience gained from that fifteen per cent of permanent and temporary vets who have already returned is that nine out of ten have gone back to work. The tenth veteran has either chosen to go back to school, chosen a different business or for other reasons has decided to forego his prewar position. A survey now in progress is expected to throw additional light on how further percentages may run.

Among the 2,500 to go into service were 1,756 who left permanent positions and as such are legally entitled to the re-employment rights laid down by Congress. The K-C message begins by reiterating these rights which permanent employees have under the Selective Training and Merchant Marine Act plus other employment rights. Then, as a further preliminary to its plan, Kimberly-Clark sums up its own attitude in respect to these legally imposed conditions. Under "Our Attitude" is listed the following:

"In respect to the legal rights you have, we will first of all conform to the spirit as well as the intent outlined by Congress and will live up fully to our obligations. As such, our re-employment program for you will be fully guided by the interpretations laid down by Selective Service.

"Secondly, as has been our practice since 1940, we will do more than the minimum laid down by Congress.

"Thirdly, in accordance with our pattern of living together in K-C since its birth, your dignity as an individual, your health, your training and experiences will receive careful attention and consideration within the framework of our business.

"Fourthly, we intend to do everything we can, based on our expansion needs, to give re-employment through the medium of preferred hiring lists to those of you who are among our 700 veterans who left temporary positions."

Kimberly-Clark's own plan is then introduced.

THE PLAN

If you are among the 1,500 veterans who left permanent position and have yet to return, we sketch below in more intimate fashion the most important parts of our plan.

As to Your Job. You will find we have definitely reserved it for you, that we are expecting you, and definitely want you to rejoin us.

Secondly, wherever your job fits into a promotional progression, your placement will be based on relative seniority. This assures you of the opportunity to try for a promotion upon return that you might have earned in that progression had you remained with us. Those of you who left the salary pay roll will receive the same consideration wherever this practice is workable. If your job was not in an established progression, your return will be to the job you left on the basis of accrued seniority. This principle also applies to you if you were in the process of learning a crafts trade and did not add to your skill while serving your country. Those of you who are junior tradesmen or apprentices and did add to your skill in the Armed Forces will receive due credit after undergoing a "looking over" stage upon your return.

Your Rate will be at least the rate of the permanent job you left. If your rate was below the maximum when you left, credit towards the maximum will be allowed while in the service. This likewise applies to veterans who left salaried positions and were below the maximum rate of their job when inducted.

Job Opportunity. Every effort will be made to improve your original placement, wherever adequate training or experience gained in the Armed Forces indicates substantial increase in skill or aptitude which can be used in our business. But here a word of caution! We cannot duplicate in some instances the income obtained in the Armed Forces nor can we upgrade more men than we have jobs for.

Training. You will obtain a knowledge of present corporation policies and practices, organizational changes, and any other information needed to bring you up to date. Furthermore, all the time and attention required to get you intimately acquainted with the job you will do is hereby assured even if training from bottom levels upward is necessary.

If You Are Disabled. Our people at home are of one mind in granting employment to any of you who return disabled. We believe, if properly placed, that you can do useful work and that your disability will not be a handicap. Plant-wide rights to any job you can do is being considered providing you cannot perform your old job or one in your own progression. Our management has already taken the position that the cost of operation or added supervision shall not be a factor in whether we will or will not employ you.

If You Are Going to School. Our thought is to grant those of you who left permanent position a leave of absence up to a maximum of one year providing you request such leave within ninety days of your discharge. This leave is subject to approval by the

A Kimberly-Clark

THE GREETING AND WELCOME. Here the Veteran, Leo Mortell, is greeted and welcomed by the Mill Manager, Ralph Kehl. Personnel Superintendent, Ed Page, and Military Correspondent, Alyce Weiss.

THE INITIAL INTERVIEW. Veteran Mortell is interviewed by the Employment Interviewer, Hugo Pieper, who notes pertinent information concerning the Veteran's training and experience while in the Armed Forces.

5

GUIDANCE TESTS. Used to facilitate placement, tests are available to veterans at their request. Here Mary Carval Noer of the Industrial Relations Department covers one of many such tests with Veteran Mortell. He seems interested.

6

THE PLACEMENT GROUP. These men, Safety Engineer Fred Bentzen, Veteran Counsellor Elmer Quayle, Day Foreman Walt Discher, and Trainer Julius Herzfeldt "tie" together what has been learned in the preceding pictures. They plan the placement, rate, training and follow-up program.

9

THE TRIP THROUGH THE PLANT. The Veteran is escorted on a trip through the plant by Hostess Virginia Thompson. Here both are taking "coke" time out, after having covered most of the plant area.

THE VISIT WITH FELLOW WORKERS. Here Veteran Leo Mortell spins a few yarns about his experiences to foreman Les Zingler, Veteran Kenneth Lenz and friends Harley Johnson and Belden Blohm.

rk Veteran Returns

REVIEW OF PERSONNEL RECORDS. Personnel Clerk, Margaret Fahrenkrug, brings the Veteran's records up to date, and originates Form D which automatically covers return compensation due and reinstatement to Group Insurance, MBA, Blue Cross, Pension Trust and other benefits.

4

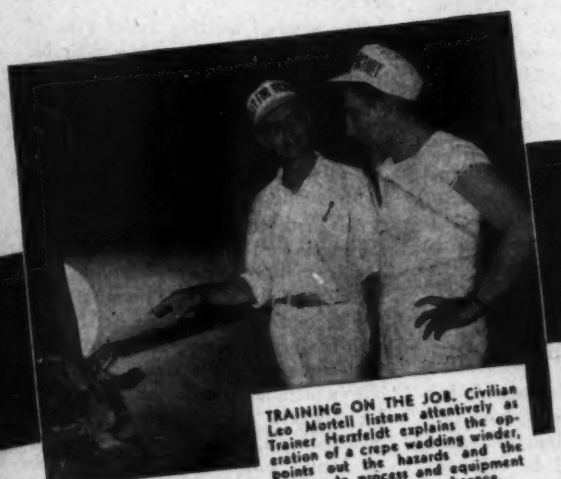
THE MEDICAL EXAMINATION. Veteran Mortell is given a complete and careful physical examination. His physical condition and any limitations for job placement, including medical recommendations, are listed. Here Dr. Pitz, with nurse Marie Sorenson looking on, tells the Veteran that he is Class A. Veteran Mortell was in the service about 4½ years.

7

THE PLACEMENT AND INDUCTION INTERVIEW. Here Elmer Quayle tells Veteran Mortell about the job and training he will get and other details he needs to know.

8

DEPARTMENT SUPERVISORS EXPLAIN THINGS. Veteran Mortell is now greeted and welcomed by his departmental supervisors Howard Palmer and Norman Jansen, who tell him something about changes in operation and new policies in effect since his absence.



TRAINING ON THE JOB. Civilian Leo Mortell listens attentively as Trainer Herrfeldt explains the operation of a crepe wadding winder, points out the hazards and the changes to process and equipment made during Mortell's absence.

12

FINAL FOLLOW-UP INTERVIEW. Civilian Mortell gets a final follow-up interview weeks later by Elmer Quayle who wants to know how he likes his job, whether he needs any further help of any kind, etc. Incidentally, Elmer is handing a $50.00 supplementary compensation check to Leo Mortell. This is a gift from the corporation to all veterans who left permanent positions and who return to employment.

unions concerned, local management, and the Industrial Relations Department. The purpose is to give you a chance to see if you can adjust yourself to classroom work and whether or not you want to continue school.

If You Are Serving in the Army of Occupation. Should you be required to serve in the Army of Occupation, we will reserve your job and other benefits for you until you rejoin us. We ask, however, that you send us proof in the form of a statement from your commanding officer. If, however, you choose to remain in the Armed Forces when you could return to civilian life, your rights and benefits will cease six months and ninety days from the war's end.

The program then concludes by reiterating those benefits which are part of re-employment. These include supplementary compensation, group insurance benefits, Blue Cross hospitalization, MBA membership, Kimberly-Clark pension trust, paid vacation program, sick leave program, etc. (See accompanying schedule of benefits).

A prelude to the Kimberly-Clark story takes the form of a congratulatory note from Cola G. Parker, president, to the returning veterans.

The program was developed by the company's Industrial Relations Department. It was viewed as a full-time job by John Simonich, acting director, and was assigned to John Schiebler, a staff member.

A few concluding observations drawn from company experience to date are these:

1) Don't rush placement of the returned veteran. Many are anxious to return to work and are fully capable of doing so. A good rule, however, is not to rush the procedure until the dissemination of basic information and a certain amount of training on the job has been followed.

2) A follow-up system with each veteran placed is essential to the best program.

3) Up to date our supervisors have handled the program very well. It is nevertheless recommended that periodic reminders should be made, to help retain this essential handling by foremen and supervisors. None of us must forget that the fighting may be over, but the bulk of veterans have yet to return, that this return must be accomplished along lines initially laid down not only by Congress but by our management.

4) A sincere approach is of the utmost necessity.

5) Bulk of our veterans believe the induction procedure should be complete but brief and completely without fanfare.

K-C BENEFITS

We know you are interested in those benefits, typically Kimberly-Clark which are yours following re-employment under H-31. Here they are:

1. Supplementary Compensation

If you left a permanent position and otherwise qualified under this instruction you were paid supplementary compensation amounting to one month's normal wage or salary from the corporation less one month's base pay from the Government or Merchant Marine. Upon return you are entitled to receive $50.000 from the corporation upon re-employment providing you have served at least twelve consecutive months and have made application for re-employment within ninety days of discharge.

2. Group Insurance Benefits

When you left your permanent position to join the Armed Forces, you received financial aid for the purchase of a portion of your National Life Insurance up to an amount equivalent to the group insurance carried by you while employed by the company. Upon return to employment you will be immediately reinstated under the Kimberly-Clark Group Insurance plan.

3. Blue Cross Hospitalization

This protection will be opened immediately to you without waiting for an enrollment period. The full cost for this protection is paid for by the company.

4. The MBA

While you were in the service the MBA committee has held its doors open for you until you come home so that you will step into the MBA membership just where you left off. No waiting period will be required. In the reinstatement, however, since the MBA is financed for peacetime conditions, we expect that you will not look to it for financing a service-connected disability or hospital service related to your experience in the Armed Forces and for which the government assumes full responsibility and payment.

5. The Kimberly-Clark Pension Trust

The trustees who are responsible for administrating this project have already decided that the time you spent in military service shall be regarded as actual Kimberly-Clark service in calculating pension eligibility and payment. All contributions made to this trust fund are originated by the company.

6. The Paid Vacation Program

Paid vacation benefits are extended to those of you who left permanent positions and time spent in military service counts towards eligibility. Vacation allowance will be paid in full in the calendar year in which you return. It is expected that you will work a certain period of time before you draw pay under the plan.

7. The 5-Day Sick Leave Program

If you left a permanent position prior to departure for the Armed Forces you will be eligible for the sick leave within the year in which you return. Time spent in service counts toward eligibility. You must, of course, start work before you can make use of the plan. The accumulative feature of this policy begins from the date of re-employment.

◆

Reconditioning Paper Mill Felts

(Continued from page 1212)

It insures a completely satisfactory reconditioning job and effectively inhibits building up of alum and lime content in the felt loading.

The Solvent Soap Type is less widely used today, as a result of the development of these two special types, but still has a useful field of application where certain fillers and sizes call for the detergent action of soap in their removal.

The *inhibited acid cleaner* is used for the removal of heavy lime deposits in a felt.

A special *solvent type of cleaner* should be used where pitch conditions are severe.

The *neutral wetting agent type of conditioner* is used where it is desirable to use a neutral material on the felts, but it has a broad field of use in conditioning felts for maximum uniformity by application through the showers, as well as in holding felts in top-notch condition over shutdowns.

Adequate attention to felt reconditioning is sure to pay dividends. Shutdowns or slowdowns for cleaning felts are cut to a minimum, because properly reconditioned felts do not require such frequent cleaning as those cleaned with inadequate materials and methods, which lead to faster loading. As long as felts are kept properly reconditioned and treated on the machine to insure uniformity, the machines can be run at top speed without any felt troubles. And, proper reconditioning actually takes a great deal less time than mere cleaning with poorly adapted materials.

The Foreman's Part In Veteran Rehiring

LAWRENCE STESSIN, Vice President
Labor Relations Institute

▶▶▶ RE-EMPLOYMENT OF veterans is becoming less and less a top management problem, and more and more a responsibility for foremen. When the broad outlines of management and personnel policy have been drawn, the hardest task still lies ahead —achieving an orderly absorption of returning veterans into the company ranks.

The veteran's right to return to his former job, or to a position of equal seniority, status and pay, providing that he was the permanent holder of the job, and not a replacement, has been established in the courts. The first test case of super-seniority—the right of the rehired veteran to displace workers of greater seniority—has also been decided in the veteran's favor. There still are many bothersome wrinkles to iron out, but it seems safe to predict that the spirit and the letter of the G.I. Bill of Rights and the Selective Service Act will be respected throughout industry.

This is the point where policy ends and practice begins. The decision has been made to rehire every veteran legally entitled to reinstatement, plus, perhaps, every possible replacement who subsequently entered the armed forces. But *who* is going to see that the job is open when the veteran returns? *Who* is going to attend to the details of reinduction and reorientation? *Who* will assume the burden of making the returnee feel at home? If there is to be retraining for the old job, or preparation for a new and better one, *who* will make the decision and execute the follow-through? And *who*, day after day and year after year, will represent the company in man-to-man dealings with the boys who came back?

There are more questions, but only one answer—*the foreman*. He is the determining factor in the success or failure of the reinstatement program. The supervisor has it in his power to fulfill the employer's promises, upon which the former soldier or seaman has banked for the duration, or to sour the entire program through lack of co-operation and consideration. For instance, here are some of the major duties which supervisors must perform, in order to make the reinstatement program a success:

1) Classify returning employees according to regular or replacement status

2) Determine the first group's seniority, status and pay

3) Plan ahead for the veteran's return, so that he can be reinstated without delay

4) Smooth out all concurrent problems, such as the displacement of civilian workers to make room for the veterans who are to take over the jobs

5) Reinduct the veterans and give them a "fresh start" toward success on the job—and eventual promotion

6) Help them through the difficult readjustment from military to civilian life

It will pay to look more closely at each of these important points. Let us take them up in the order given.

1. Classifying returning veterans: Every person who left the firm's employ to enter the service, belongs in either regular or replacement class. What amounts to an inventory must be taken to see how many persons there are in each group. Some of this information can be secured from the personnel department records, but it is sound practice to have each record examined by the proper foreman as a check upon its accuracy. An error in determining the status of the veteran could result in litigation. Even replacements who have been correctly classified may appeal to Selective Service or the courts, so it is important to have an accurate record.

2. Determining status, seniority and pay: The simplest way to do this is to set up a 5 x 7 card for each employee who joined the armed forces, filling in the name and other available data at the personnel office and then distributing them to the proper supervisors to be completed. Each card should provide space for such specifications as job number, rate, seniority, date of leaving for military service, probable placement after return, plus information as to what must happen to the present worker on that job. Can the latter be used elsewhere in the department? Does he or she have skills which might justify a transfer? Is it desirable to retain this worker in addition to rehiring the veteran who has a claim upon the job?

3. Planning ahead for veterans' return: In each department, the foreman should make up an organization list or chart which assigns a specific job to each potential returned veteran who has been classified as the "regular" holder of a job. It need not be the exact position he occupied before he was inducted, but it must be every bit as good—or better. This chart, of course, will have to be brought up to date as servicemen announce whether or not they plan to return. In the absence of word to the contrary, it is wise to assume that all veterans will come back, and that they are physically able to resume their former occupations.

In the case of the handicapped, supervisors can be of tremendous help in selecting or revising jobs which can be performed by such veterans. Regardless of how much special counsel management secured in this direction, there is no substitute for the practical experience and enthusiastic support of the foreman on the job. He knows every wrinkle, every possible deviation from established routine. He should be sold on making extraordinary efforts to help out the amputee and the vet whose health has been undermined by the war.

4. Displacing civilian workers: If the present employees fully realize that their jobs are temporary, and are subject to claim by returned veterans, there can be no serious ground for resentment when the issue finally arises. If seniority is the only basis for decision, as it is in some plants, every worker's seniority status should be clearly understood. If there is to be any question on such grounds, it is better to "have it out" via the regular grievance machinery *before* the veteran returns.

Supervisors should be placed on their guard against making any statements which might be interpreted by workers as assurance that the latter will be "protected" in their jobs. The clear-cut right of the veteran to reclaim his job should be understood by all who stand to lose out by his return.

In some instances, it will be found possible to avoid displacing workers. Vacancies left by resignations and discharges for cause may sometimes be left unfilled, or may be handled by persons temporarily transferred from other jobs or departments. Spread over a period of months, the normal mortality may leave ample openings for the returning servicemen. But even

this "painless" course involves skillful planning by the foreman and his boss.

5. Reinducting the veteran: The first day back on the job is a red letter day for the former warrior. He has been looking forward to it for months, even years. At the same time, he probably has worried about it, too—wondering if he can still "make the grade," worrying how he will "fit in."

Here is where the foreman can do valiant service, both to the company and the individual veteran. If the latter is to work again under his direction, the foreman should welcome him like the prodigal son, and personally introduce him to his new fellow workers, because most of them may be strangers. If the veteran's former supervisor has been transferred to some other department, he can still help out by escorting the returnee to the job assigned to him, and by presenting him to the new supervisor in charge.

Everything normally done for a new worker should be done for the returned veteran—*plus* all the trimmings of kindliness and consideration and remembrance that can be added.

6. Weathering the readjustment period: Much of the "problem child" copy that has been written about returning veterans was based on limited experience—largely with men who were discharged for medical reasons. Without idealizing the veterans who are now returning to civilian life, it is a good start to concede that the great majority of them are healthier, stronger, more amenable to discipline and better trained to resume civilian responsibilities than were their counterparts after World War I.

Of course it is hard to settle down to a machine or a truck after handling machine guns and tanks. There is boredom in a job, just as there was in the camp or the distant island base. There are hard-to-bear domestic responsibilities, just as there were hard-to-bear relationships in barracks or in close quarters afloat. And there may be a sprinkling of special cases for every plant to handle—but it is better to single them out for special treatment than to take the opposite extreme and regard all veterans as "queer."

The foreman who managed to get through the war with marginal labor —nursing this one, encouraging that one, being a father to the youngest and a son to the over-age—will have little or no trouble with veterans.

Re-employing them is a human relations assignment. That's why supervisors are the logical men to see the job to completion.

Every Supervisor a Cost Manager*

HENRY V. OBERG
Armstrong Cork Company

▶▶▶ TO MANAGE COSTS a supervisor must have a practical understanding of the Company's cost system. He must realize the importance of managing costs, and how to manage the costs under his control. Without this knowledge, a supervisor is in a difficult position to assume his full responsibility.

During the war period, we have relaxed our vigilance over the control of costs to some extent. Our efforts have been devoted to obtaining the maximum production under the various handicaps attendant upon operating under war conditions. However, as we begin the production of civilian goods under competitive conditions, the cost of production will again be of first importance.

The top management of a Company measures its progress through the use of cost accounting. This is merely the process of recording and analyzing the expenses incurred in operating the business.

The major divisions of cost are the cost of manufacturing the goods, the administrative expenses, and the selling and distribution expenses. The analysis of these costs must be obtained and interpreted intelligently for their guidance in decisions concerning the future of the enterprise.

The operating management, in turn, uses cost accounting to reveal the tiend in costs and to endeavor to control and reduce these costs. Some cost accounting procedures give essential information to the supervisor as well as top management. Where this is done, the supervisor has a better basis upon which to control the costs in his department. However, it is essential that he understand the use of this information.

Where the supervisor receives little or no information on costs, he can still develop his own means of control. As a general rule, cost accounting only provides a performance record for future guidance while real control is exercised daily as the expenses are incurred.

The management of costs by a supervisor covers two functions: (1) The control of current costs; (2) the continual endeavor to reduce these costs by improvements in work methods.

The control of these costs need not be expressed in dollars and cents. The objective is to develop simple records which will give the supervisor a day-by-day picture of his operations. The development of a budget or yardstick for various conditions of operation and comparison of actual performance with this yardstick will accomplish this purpose.

For example, the control of labor used in the manufacture of a product can be developed by a determination of the number of employees or man-hours needed to produce a certain volume of production, to operate for a specified number of machine hours or other such variables which will provide a good measure of performance. Other records showing performance by individuals or crews will indicate where special attention may be needed.

For the best control and reduction of costs, the need for the co-operation of the employees cannot be over-emphasized. A test of the supervisor's leadership is his ability to obtain this co-operation. It must be earned. The willingness of the employees to help in the control of costs comes only after satisfaction and faith in the supervisor, as well as the company, has been established.

Much thought and effort is being directed toward accomplishing this objective. With specific reference to employee co-operation in cost control, there are many items which might be listed as contributing toward this development. Here are a few suggestions which a supervisor can consider:

1. Give the employees information concerning the elements affecting the cost of operation.
2. Encourage economy in the use of materials, power services, and supplies.
3. Encourage employees to make suggestions for better operation.
4. Maintain good housekeeping standards. Everyone does his best work in a clean and neat environment.
5. Encourage competition by posting information about scrap, production, quotas, and material use.
6. Assign employees to jobs for which they are best suited and train them to do their jobs effectively.

(*) Abridged from *Management Information*, published by Elliott Service Co., Inc., New York City.

Paper SKETCHES . . . . . .

IN 1728 THE BOTTOM OF THE BRITISH MAN-OF-WAR, PLYMOUTH, WAS COVERED WITH BROWN PAPER, OVER WHICH WAS PLACED THE SHIP'S SHEATHING. THIS PROCEDURE WAS BELIEVED TO HELP PREVENT WORM-RAVAGE.
WOOD-FRAMED, IRON-ROOFED HOUSES WITH CARDBOARD WALLS WERE POPULARLY USED IN THE 1890's IN BULUWAYO, RHODESIA, SOUTH AFRICA.
GILT-EDGED PAPER WAS EMPLOYED AS EARLY AS 1584 FOR A PETITION ADDRESSED TO QUEEN ELIZABETH OF ENGLAND.
THE ADDITION OF 10% OF GLASS FIBER TO THE FIBER FURNISH OF EXPLOSIVE PAPER, SUCH AS IS USED FOR WRAPPING DYNAMITE, IS REPORTED TO MATERIALLY INCREASE THE TEAR STRENGTH OF THE PAPER. LIKEWISE, SUCH PAPER IS SAID TO DISINTEGRATE AFTER THE EXPLOSION, THUS PRECLUDING THE POSSIBILITY OF FIRE FROM SMOLDERING SMALL PIECES.

ALLIED

AMERICAN CHAIN BUYS LONG ISLAND CITY PLANT—NOW HELICOID GAGE DIVISION

The business of the Certified Gauge and Instrument Corporation, Long Island City, New York, has been acquired by American Chain & Cable Company, Inc., Bridgeport, Connecticut.

Manufacturing will continue at the Long Island City plant under the name Helicoid Gage Division, American Chain & Cable Company, Inc. Helicoid Gages were developed during the war and the facilities of the Long Island City plant have been devoted principally to their manufacture. These gages are used in the same general fields as two of American Chain & Cable's present lines, Reading-Pratt & Cade valves and d'Este Automatic regulating valves. The acquisition of this new line will supplement the company's products for markets it now serves.

■

ALLIS-CHALMERS BASIC INDUSTRIES LAB. SHOWN TO PRESS REPRESENTATIVES

New Allis-Chalmers research facilities—developed for the basic industries—were the subject of a conducted tour of press representatives by executives of the company on the afternoon of October 16.

Special sections of the laboratory are designed to handle specific problems of concentration, recovery and processing of almost every kind of industrial basic raw material. Among the facilities for both milling and mining operations is a flexible pilot mill four stories high, while later additions, which have been under construction for the past two years, will include an experimental kiln 30 feet long. From floor to floor of the pilot mill, samples of from 500 pounds to 10 tons flow through crushing, grinding, concentrating and pyro-processing sections, as technicians analyze the effect of the machinery on the raw materials involved. Simulating as closely as possible actual plant operation, the pilot mill consists mostly of machines of commercial design in small capacity size.

Where a flow of materials is not involved, batch testing facilities supply the answers. Samples of from 25 to 500 pounds are put through various processes in successive steps, the material being carefully weighed and controlled in each.

The batch and pilot mill sections together constitute a testing service in which practically all known processes of treatment can be tried out, and with their application experimentally, the "guess factor" in making recommendations is virtually eliminated, the company points out.

This basic industries laboratory combined with the company's general chemical, analytical, electrical and physical laboratories, make it possible for Allis-Chalmers to serve a great variety of industries on major processing problems. According to W. C. Johnson, Allis-Chalmers vice president, this service is in line with the company's desire to add to its long established reputation of being supplier of the world's widest variety of products for the basic industries.

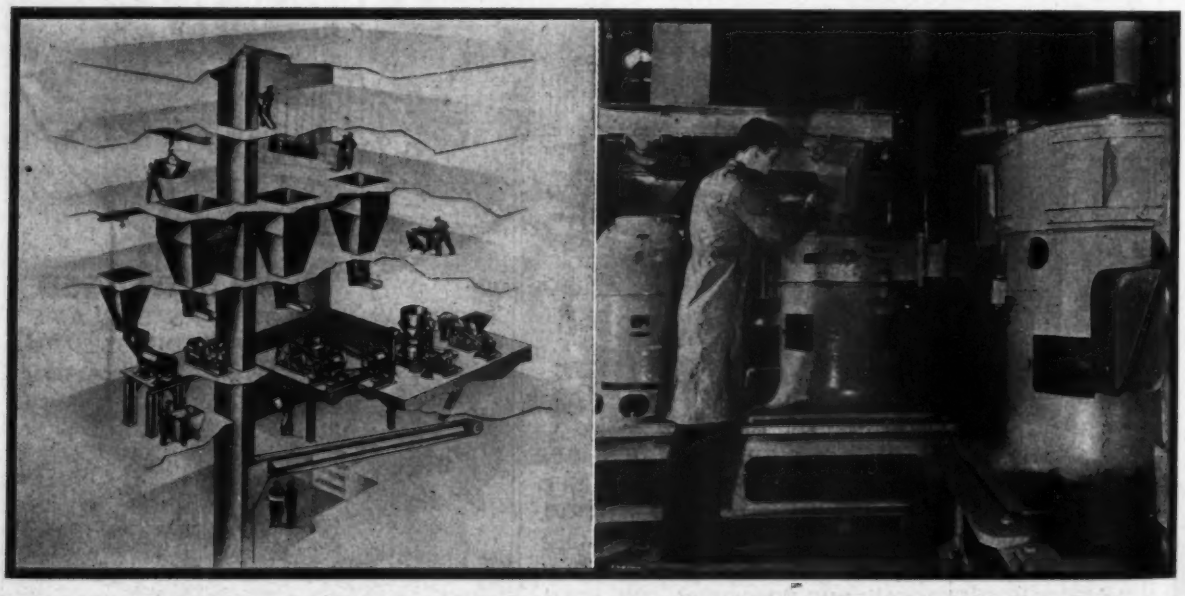
◆

NEW DISTRIBUTORS ON PAC. COAST APPOINTED BY FAIRBANKS, MORSE

The Seattle (Wash.) branch of Fairbanks, Morse & Company, has announced that the Milwaukee Machinery Company, of Portland (Oregon), has been appointed exclusive distributor for the complete line of Fairbanks-Morse Turbine Pumps, including the Fairbanks-Morse Pomona Pump and the Fairbanks-Morse Oil Lubricated Turbine Pump. That company also will handle service and sales for Fairbanks-Morse Niagara Propeller and Mixflow Pumps, as well as F-M Westco Horizontal Turbine Type Pumps.

The pump department will be headed by W. H. Perry, who was with the Dallas branch of Fairbanks, Morse & Company for many years. More recently, he was associated with the Westco Pump Sales Company in California.

Simultaneously, the Seattle branch



LEFT—This three-dimensional cutaway drawing shows in skeleton fashion the new pilot plant. Materials processed go from the pilot plant to other sections of the laboratory for testing. Treating of large samples enables research men to gain information which could not be obtained in small-scale batch tests. . . . RIGHT—Many plate types permit the inter-plane grinder to spare a wide range of products. The vertical hammer mill (shown at right) carries a full screen instead of the conventional partial screen

READY FOR ADOPTION

KELGIN LV

This is the new paper sizing material—ready for your adoption in preparing paper board for wax coatings—for gloss ink printing.

It's surprisingly inexpensive and very simple to use. KELGIN LV dissolves quickly in cold or hot water. It's easily adaptable to water box application on the calender stacks. And it has various other money-saving applications.

We invite your queries about possible applications. We offer fullest cooperation on all experiments and trials. Our Technical Department is at your service—without cost or obligation.

KELCO COMPANY

75 E. Wacker Drive
CHICAGO-1

31 Nassau Street
NEW YORK-5

530 W. Sixth Street
LOS ANGELES-14

has announced that the Cascade Machinery Company, of Seattle, Washington, will handle all Fairbanks-Morse pumping equipment including Pomona Pumps and Westco Pumps. This company also will act as distributor for F-M motors and electrical equipment. The pump department at Cascade will be managed by Clude A. Retter, recently of the Seattle branch of F-M. He was district manager for the Pomona Pump Company before it was purchased by Fairbanks, Morse & Company.

◆

WESTINGHOUSE NOW HAS NEW WESTERN LABORATORY

A new laboratory to which all western industry may bring its problems of speeding peacetime production by making use of the newest scientific methods of high frequency heating, was opened recently in Los Angeles by the Westinghouse Electric Corporation. In charge of the laboratory is Dr. Russell A. Nielsen, formerly of the company's Research Laboratories at East Pittsburgh. He is assisted by a staff of engineers.

The five-kw. dielectric heating generator in the laboratory operates at a frequency of either five or 30 megacycles — 5,000,000 or 30,000,000 cycles. The 20-kw. induction heating generator operates at a frequency of 450 kilocycles, well below the familiar commercial broadcasting band.

On a one-kw. generator, Dr. Nielsen demonstrated the high speed setting of glue, a process which is materially speeding the fabrication of plywoods and enabling the manufacture of thicker, stronger sections than were possible by earlier processes. Thermosetting glue in the demonstration was set in less than one minute by the new process. As much as 24 hours may be required for setting by drying in air.

◆

E. C. ATKINS COMPANY HAS MODERNIZATION PROGRAM

A modern daylight structure of steel and concrete will replace the present 75-year-old plant of E. C. Atkins and Company, pioneer Indianapolis firm and world's largest exclusive manufacturer of saws.

According to E. C. Atkins, president of the company and grandson of the founder, present construction plans involve an expenditure of $1,500,000, but this figure may later reach or exceed $2,000,000.

Work on the new program has already been started and is scheduled for completion by late fall of 1946. The Carl Geupel Construction Company, Indianapolis engineers and contractors, will be the builders.

New Westinghouse laboratory in Los Angeles

Building plans call for a complete modernization program designed to maintain the company's leadership in saw making and keep Indianapolis in the forefront as one of the centers of the world's saw making industry.

The entire present structure of the Atkins company now occupying a 2-block area adjoining the downtown section of Indianapolis will be replaced.

◆

MM&M EXPECTS NEW PLANT TO BE READY EARLY IN YEAR

The new plant being built at Watertown, Massachusetts (suburb of Boston), for Manning, Maxwell & Moore, Inc., will be ready for occupancy shortly after the first of the year. It will be used to manufacture the well known line of Hancock valves, inspirators, injectors and ejectors.

As soon as the executive offices are completed, the sales department for these products, with M. S. Palmer as manager, will be moved from Bridgeport (Conn.) to Watertown.

◆

SEYBOLD AND CADE MAKE TOUR IN SEARCH OF IDEAS FOR LAWSON PAPER CUTTER

In quest of new ideas and the most modern improvements for the new Lawson paper cutting machine, a two-man "Idea Committee" of the E. P. Lawson Company, New York City, has just toured important industrial manufacturing centers on the Eastern Seaboard. This committee, composed of Fred W. Seybold, chief engineer, and Frank Cade, maintenance engineer, uncovered many new features of safety and machine design on their trip, and in Washington (D. C.) they took up the question of new patent features.

Mr. Seybold, who directs the design of the Lawson cutter, has been with the company since last July (P. I. and P. W., Aug., p. 736).

Mr. Cade is making a survey of equipment and maintenance needs of the printing and bookbinding industries with a view toward setting up a capacity potential for the production of the new Lawson paper cutters. In addition to the survey on paper cutters, he is making an analysis of the demand for stitchers, multiple-head drills and other binding equipment. He has been with the Lawson company for almost 20 years.

◆

COCHRANE CORP. ACQUIRED BY GROUP FROM THAT COMPANY

Cochrane Corporation of Philadelphia, manufacturers since 1863 of steam power plant and industrial equipment has been acquired by a group of men long associated with the company in the engineering and sales divisions.

The new corporation will be managed and operated by its owners. T. E. McBride was elected president and the following men named as vice presidents: C. E. Joos, Apparatus Division, V. A. Rohlin, Works Manager, A. E. Kittredge, Chief Engineer, and E. S. Daugherty, Heater Division. The Board of Directors includes H. E. Sibson, for many years the company's

Draper's

ATLAS OF AMERICAN PAPERMAKING

No. 11 PUBLISHED BY DRAPER BROTHERS COMPANY • CANTON, MASSACHUSETTS

Map copyright by L. D. Post, Inc., New York. American Map Co., N. Y.

While the ink was still fresh on the Declaration of Independence, in 1776, the Maryland Convention recognized the importance of paper by advancing to one James Dorsett four hundred pounds sterling for the establishment of the first paper mill in the State.

After the civil war there was a boom in papermaking in Maryland, and as late as 1886, there were twenty-nine mills in operation, few of which, however, were large. The number has since shrunk to eight, but with more modern machinery, production has reached about 162,000 tons annually, and Maryland stands twentieth among the States in the volume of paper produced.

Book paper constitutes the largest item, accounting for about one half of the total, and the production of paperboard is a close second, kraft corrugating coming third. Mention might also be made of the single specialty mill in the District of Columbia, originally Washington County, which was ceded in 1788 by Maryland to the Federal Government, to become the site of the National Capitol.

Paper mill equipment in Maryland includes 13 Fourdriniers, 9 cylinder machines, and 5 sulphate digestors.

Draper Felts for Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

Canton, Massachusetts

RALPH E. BRIGGS Sales Manager

BRADFORD WEST PITTSFIELD, MASS. • WILLIAM N. CONNOR Jr CANTON, MASS. • L. H. BREYFOGLE KALAMAZOO, MICH. • CHAS. E. BERTSCHY MILWAUKEE, WIS. • W. L. CAMPBELL SAVANNAH, GA. • BALFOUR GUTHRIE & CO. Ltd. PACIFIC COAST

General Sales Manager, and W. V. Sauter of Philadelphia.

There will be no change in the widely-known Cochrane line or sales policies, nor in the nation-wide sales representation of the Company. An aggressive program of development and research is planned to maintain the company's leading position in its field.

◆

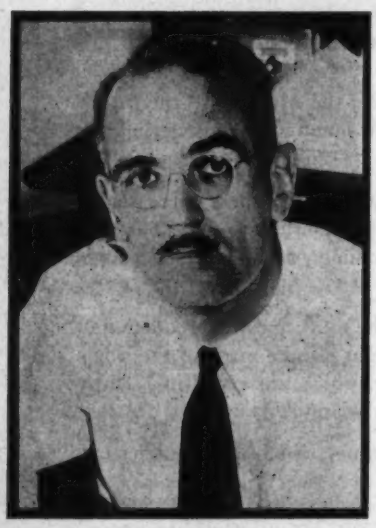
▶▶▶ FOR THE EXCELLENCE of its 1944 Annual Report (selected as one of the two best stockholders' reports in the chemical industry), The Mathieson Alkali Works, New York City, has been awarded the Financial World citation and trophy — the "Oscar of Industry." Awards were made for the two best reports in each of 50 business classifications, selected from a total of 2,500 entries. All were judged on the basis of financial, statistical, and editorial content, format, typography, and illustration.

◆

EDUCATIONAL PLAN PUT INTO WORK BY THE HAGAN CORP. AND AFFILIATES

A plan has been set in motion by the Hagan Corporation and its subsidiaries, Hall Laboratories and Calgon, Inc., which it is hoped will fill the current gap in the stream of young chemistry and engineering students caused by the war.

This broad-gauge plan will aid members of the companies' own staff toward completing a college education in night school. The courses taken are planned so as to serve to up-grade the employees in their work with the three companies.



Dr. Everett P. Partridge

The companies will pay half the tuition and fees for any course the individual enters, and on attainment of a degree, will pay the other half, according to Dr. Everett P. Partridge, picked to supervise the plan.

The idea is a recognition of the fact that many technical staff members already have given years to night school courses to improve themselves at their own expense and that the companies stand to gain from this broadening of horizons through college or university courses in chemistry, engineering, or other subjects.

◆

STAUFFER CHEMICAL OFFERS SHARE FACILITIES AT LAS VEGAS WITH OTHER FIRMS

The expansion of its operation in the caustic soda and chlorine section of the vast Las Vegas (Nevada) magnesium plant has been announced by Stauffer Chemical Company.

Stauffer Company will use only half of the huge productive capacity of the Las Vegas facilities, which has been under lease from the RFC, and other manufacturers are being offered the opportunity to establish branch factories at the location in a co-operative arrangement with RFC. Scores of buildings, most of which are reinforced concrete and air-conditioned, are available at reasonable terms for lease to manufacturers of chemical products. The location—only 300 miles from Los Angeles—offers low cost power, water, and nearby raw materials.

One of the largest and most modern chlorine-caustic soda units in the country, the plant is a part of Basic Magnesium, Inc., which was closed down following the cessation of hostilities in Europe. Built to supply the huge magnesium setup with chlorine, the new Stauffer project draws its electric power from the hydroelectric station at Boulder Dam, only a few miles from the plant.

Additional information concerning buildings and equipment can be obtained from E. T. Ross, Room 2710, 420 Lexington Avenue, New York City. Mr. Ross is working jointly with the RFC and the Stauffer Chemical Company toward the development of this area.

◆

U. S. SUGAR STARCH PLANT IN THE 'GLADES NOW IN PRODUCTION

Commercial production in the new $7,000,000 starch house of the U. S. Sugar Corporation at Clewiston, Florida, has begun, bringing a new crop and a new enterprise to the Florida Everglades that will provide employment for 2,500 persons.

Second largest individual enterprise in the 'Glades, after sugar production, it will provide a new source of starch from sweet potatoes. It will produce annually 75,000,000 pounds of highest grade starches and their derivatives, along with some 30,000,000 pounds of by-product materials for livestock feed.

◆

THREE-DAY SALES CONFERENCE HELD BY E. C. ATKINS & CO.

The executive and branch managers of E. C. Atkins and Company recently held a three-day sales meeting, climaxed by a banquet at the Indianapolis Athletic Club.

Primarily, the meeting was devoted to analyzing sales of the company's products and exploring the future possibilities in the postwar period. The development of new fields, and the introduction of new and improved products for domestic distribution, as well as export, were fully outlined.

◆

BROOKS ROTAMETER COMPANY

Eight men with an aggregate of 40 years of experience in rotameter engineering have organized the Brooks Rotameter Company, a corporation capitalized at $100,000. A factory has been acquired at Lansdale, Pennsylvania, with 18,000 square feet of floor space and the manufacture of all types of rotameters for flow rate measurement and control has been started.

Stephen A. Brooks, president, is a graduate chemical engineer with a wide experience in chemical manufacture and instrumentation. For the past six years he has been vice president of Fischer & Porter Company in charge of sales and advertising.

Stephen A. Brooks

Harry H. Long will be chief fluids engineer in charge of specifications and

ONE OF 27 DOW CHEMICALS USED BY THE PAPER INDUSTRY

working with water

"through thick and thin"

answering the problem of water thickeners . . .

Water frequently presents thickening problems when used in making products sold in solution.

Often these products must not only be thickened—sometimes they must also be thinned before use. In both operations, Methocel (water-soluble Dow Methylcellulose) easily meets requirements. Methocel works well with water "through thick and thin."

Take the manufacture of germicidal solutions as an example. For many applications these solutions must be thickened so as to be applied most effectively to a specified area or substance. Germicidal solutions are concentrated, however, and often must be diluted with water to the required strength. Methocel thickens germicidal solutions so that they do not pour too freely. This makes exact dilution easy, so that the germicides are not wasted when used.

This is only one example of an easy and effective application of Methocel, a water-soluble cellulose ether of exceptional purity and uniformity. Methocel can serve you well—as a dispersing, thickening, emulsifying, binding and coating agent. It may be the answer to many of your product problems. You can find out by asking Dow for complete information.

THE DOW CHEMICAL COMPANY · MIDLAND, MICHIGAN

New York · Boston · Philadelphia · Washington · Cleveland · Detroit · Chicago
St. Louis · Houston · San Francisco · Los Angeles · Seattle

Methocel

Water Soluble Dow Methylcellulose

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY

calibrations. He will be assisted by James Anthony and Joseph Ducsik, who have had long experience in specifying and calibrating rotameters. Garbutt W. Aiman will be in charge of precision rotameter tube manufacture. Jack Bradley will manage production, and Lou Rosenblum will handle purchasing and accounting.

This company will specialize in rotameter flow rate instruments designed to meet the difficult services and corrosive atmospheres encountered in the process industries. The exact address of the company is the Brooks Rotameter Company, Box B-711, Lansdale, Pennsylvania.

◆

▶▶▶ THE HIGHEST AWARD OF the Direct Mail Advertising Association was given to The Manhattan Rubber Manufacturing Company Division of Raybestos-Manhattan, Inc., at the Association's annual meeting recently held in New York City. The Manhattan company won honor because of its advertising and sales promotion campaign, which caused it to be selected a Direct Mail Leader for 1945.

◆

WYANDOTTE CHEMICALS PLACES 8 NEW SALESMEN

At a recent sales meeting, eight new Michigan Alkali Division representatives at Wyandotte Chemicals Corporation were assigned to duty following a six-month sales training course at the general offices in Wyandotte, Michigan.

Among these new representatives are men with technical training in the pulp and paper, rubber, chemical, plastic, construction, and manufacturing industries; and sales plans are being made to give customers additional service and technical information concerning both the organic and the inorganic products of the company.

In addition to adding new representatives in preparation for future business, a new Michigan Alkali Division office is being opened January 1 in Pittsburgh, in the P. & L. E. Terminal Annex Building. M. J. Conway, formerly of New York, is the manager.

◆

▶▶▶ A NEW PLANT is being added to the Niagara Falls (N. Y.) production facilities of The Mathieson Alkali Works, which will double the output of sodium chlorite. Construction cost of the new building is estimated at $35,000; its total cost will be about $323,000.

◆

▶▶▶ THE AMERICAN Rolling Mill Company announces that it has made Middletown, Ohio, a basing point for the various grades and sizes of stainless steel sheets and plates made at its plant there.

◆

▶▶▶ AN ADDITION TO the naval stores plant of Hercules Powder Company, at Brunswick, Georgia, now under construction, is expected to be in production by April 1, 1946. This addition will cost $1,250,000 and it will add approximately 3,600,000 pounds of rosin and resinous products and 720,000 pounds of liquid products to the plant's monthly output.

◆

HEWITT BUYS ANOTHER PLANT IN BUFFALO

To provide more space for the manufacture of new peacetime products and for expansion of its present line of industrial rubber items, Hewitt Rubber Corporation has purchased a large plant adjacent to its headquarters on Kensington Avenue, Buffalo, New York. Plans to link the two plants by an overhead pass and interplant conveyor system are under way.

The purchase price announced by Thomas Robins, Jr., president, was $200,000. It was also stated that $150,000 will be spent to recondition the plant and $350,000 for new production machinery. Hewitt will begin reconditioning the plant as soon as vacated by the Navy, which has had a lease on the property since 1944. It is expected that three full production lines on Restfoam products will be in operation early in 1946.

◆

NEW LABORATORY TO BE BUILT AT PARLIN (N. J.) PLANT OF HERCULES POWDER

Plans for a new laboratory to be erected early in 1946 at its Parlin, New Jersey, plant have been announced by Hercules Powder Company.

This laboratory will serve as headquarters for the company's chemical and mechanical development and research work on plastics, and will be set up in such a way that customers who buy basic materials from Hercules can see a demonstration of new techniques applicable to their work, and can consult with the laboratory chemists on their processing problems.

Tests will be conducted there on the three plastics materials—ethyl cellulose, cellulose acetate, and nitrocellulose—produced at Parlin and at other cellulose products department plants.

R. L. Stern, chemical superintendent, will be in charge, with Walter Gloor as plastics supervisor.

◆

▶▶▶ ONE OF THE earliest members of the Technical Section of the Canadian Pulp & Paper Association, Maurice Neilson, has opened an office as consulting engineer at 130 Duchess Street, Toronto, Canada. Mr. Neilson has had a long practical experience with Belgo, J. R. Booth and Alliance companies.

◆

▶▶▶ POSTWAR DEMANDS for cellophane have caused E. I. du Pont de Nemours and Company to start enlarging its Clinton, Iowa, plant, one of the four Du Pont plants now making cellophane. In addition, improvements are under way at the Spruance plant near Richmond, Virginia.

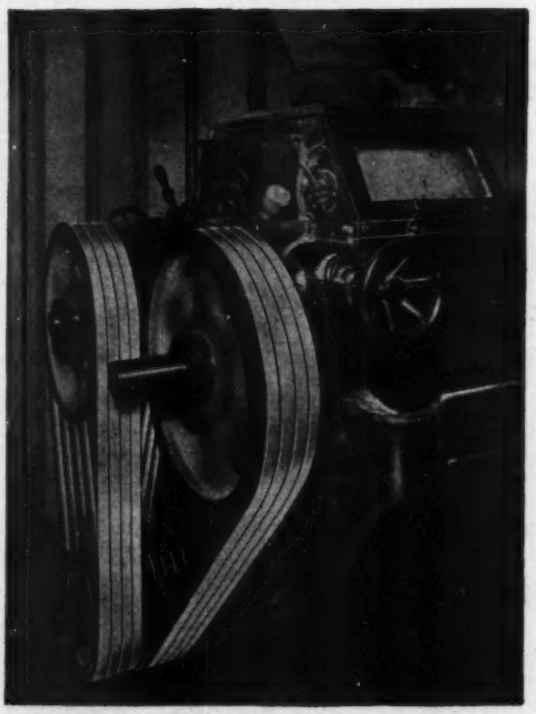
◆

▶▶▶ A QUALITY CONTROL testing and research laboratory, equipped, staffed and run by the United States Testing Company, Inc., will be ready for operation on November 1 at the California (Mo.) plant of Moniteau Mills, Inc. The laboratory will conduct necessary tests to accurately control the quality of the materials through all stages of manufacture.

Following a six-month sales training course, these new representatives of the Michigan Alkali Division of Wyandotte Chemicals Corporation soon will be found at the locations following each man's name. Left to right: Paul Weller, market research department, Wyandotte office; James Syberkrop, New York; Charles Chestnut, West Coast; James Mills and Tom Simpson, Chicago; Robert Sproule, Calcium Chloride representative, headquartering in Wyandotte; Edward Ross, E. & F. King & Co., Boston; and Pete Fuger, St. Louis

The reason for this fact is worth knowing

Your **STANDARD** GATES VULCO ROPES are TODAY out-performing **ANY** V-Belts **EVER** Built Before!



All Gates V-Belts are Built with The Patented CONCAVE SIDE

During the war, our Army tanks, tractors and self-propelled big guns required, for *combat* service, V-belts built to performance standards never dreamed of before. Gates developed these greatly superior V-belts through intensified, specialized research — and here is what this NOW means to you:—

Here is the reason

● Every improvement developed by Gates for these Army V-belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

Here is one rare instance in which you have received *immediately* the full advantage of war-time improvements developed primarily for military use. Ordinarily, *you* have to wait. But in the case of Gates V-belts, everyone recognized the vital role they played in maintaining the production that proved so essential in winning the war.

That is why Gates has been able to pass on to you, day by day, every V-belt improvement developed for our armed forces during the war — and that is why your *Standard* Gates Vulco Ropes are today outperforming *any* V-belts ever built before!

Gates

THE MARK OF SPECIALIZED RESEARCH

THE GATES RUBBER COMPANY

Engineering Offices and Jobber Stocks in All Large Industrial Centers

4811

GATES VULCO ROPE DRIVES

CHICAGO 6, ILL., 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue. ATLANTA 3, GA., 521 C. & S. Nat'l Bank Bldg.
LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway. DETROIT 2, MICH. 223 Boulevard Bldg.
PORTLAND 9, ORE., 333 N.W. 5th Ave. DALLAS 2, TEXAS, 1710 N. Market St. SAN FRANCISCO 3, CAL., 170 Ninth St.

ASSOCIATIONS

NEW OFFICERS ELECTED BY SOUTHERN DIVISION SUPERINTENDENTS ASS'N

At the fall meeting of the Southern Division of the American Pulp and Paper Mill Superintendents Association, held November 1 and 2 at Bogalusa, Louisiana, a large attendance participated in the two-day sessions and social events.

The following officers were elected to serve for 1946:

Chairman—Norman U. Dickson, National Container Corp., Jacksonville, Fla.

First Vice Chairman—E. A. Newman, Crossett Paper Co., Crossett, Ark.

Second Vice Chairman—Ray Almand, Union Bag & Paper Corp., Savannah, Ga.

Third Vice Chairman—Frank Jensen, Hollingsworth & Whitney, Mobile, Ala.

Secretary-Treasurer—R. H. Stevens, National Container Corp., Jacksonville, Fla.

◆

NATIONAL COUNCIL FOR STEAM IMPROVEMENT TAKES OVER WIS. WASTE DISPOSAL

An announcement issued on October 17 by Russell L. Winget, executive secretary of the National Council for Stream Improvement, and John G. Strange, secretary Sulphite Pulp Manufacturers' Committee on Waste Disposal of Wisconsin, states that an important change has been made in waste disposal study in Wisconsin.

The National Council for Stream Improvement (of the Pulp, Paper and Paperboard Industries) Inc., and the Sulphite Pulp Manufacturers' Committee on Waste Disposal of Wisconsin have completed an agreement whereby the national group will take over the Wisconsin group's activities in the pulp and paper mill waste disposal field. The Wisconsin group has been engaged for the past six years in research activities centered at The Institute of Paper Chemistry at Appleton, Wisconsin, to determine means of disposing of waste sulphite liquors in a manner consistent with the public interest. Concurrently with its activities in the abatement field, the Wisconsin group, through its research group at The Institute of Paper Chemistry, has carried on scientific investigation in connection with the utilization of chemicals and other valuable materials which, under current day practice, are generally discharged with the waste liquor. The work sponsored by the Wisconsin group has been carried on under the direction of Mr. J. M. Holderby, Co-ordinator, and more recently, during Mr. Holderby's absence in service in the Armed Forces, under A. J. Wiley. Co-operating in these activities were L. F. Warrick, State Sanitary Engineer of the State of Wisconsin Board of Health, and other personnel of the Board. These latter activities in the utilization field the Wisconsin group will continue at the present location and with present personnel at The Institute of Paper Chemistry. The waste abatement activities which are being taken over by the national group will likewise be carried on at The Institute of Paper Chemistry by the personnel employed by the Wisconsin group but will be under the supervision of the National Council for Stream Improvement, Inc., and financed by it.

The waste disposal problem of sulphite pulp mills is common to mills in all the various regions of the United States where such operations are carried on and the national aspects of the problem have influenced the decision of the Wisconsin group to relinquish this phase of its activities to the National Council for Stream Improvement, Inc. Other pulp and paper industry groups are currently investigating the disposal of waste sulphite liquors along somewhat parallel lines. Through the agency of the National Council such activities will be co-ordinated and duplication of effort and needless expenditure avoided.

The specific projects taken over from the Wisconsin group include the Trickling Filter and River Reaeration Projects. Waste Sulphite liquors contain materials (mainly wood sugars) which are fermented by the micro-organisms normally present in streams. In the process of this fermentation, a portion of the dissolved oxygen in the stream is consumed, thereby reducing the amount of oxygen available for fish life. The two projects relate to methods for providing the stream with sufficient oxygen for both the fermentation and fish life. In the Trickling Filter process the liquor is treated and the biological oxygen demand is satisfied before the waste liquor passes into receiving waters. In the River Reaeration process the untreated waste liquor after dilution in a river is acted upon by the micro-organisms naturally present in river water, and the deficiency in available oxygen is satisfied by diffusing large amounts of air into the river. The Trickling Filter has been under experimental development for some six years, and has progressed from the laboratory stage to a 15-foot filter in operation at the Consolidated Water Power and Paper Company's mill at Appleton, Wisconsin. The River Reaeration is in actual operation at the Flambeau Paper Company at Park Falls, Wisconsin. All of the physical properties, research data, and patent rights applying to these two projects became the property of the National Council by the agreement and will be developed in the interest of its members in full cooperation with the regulatory agencies involved.

The National Council for Stream Improvement (of the Pulp, Paper and Paperboard Industries) Inc. includes within its membership some eighty per cent of the total pulp, paper and paperboard production of the United States and through the use of co-operative funds is attempting to arrive at a solution to the industries' problems in the waste abatement and utilization fields. Fellowships have been established at the Mellon Institute of Industrial Research in Pittsburgh, Manhattan College in New York, The Institute of Paper Chemistry at Appleton, Wisconsin, the University of Michigan at Ann Arbor, Purdue University at Lafayette, Indiana, and Rutgers University at New Brunswick, N. J. The projects at these institutions are established on an individual basis, each one having to do with some particular industry problem and are co-ordinated through the National Council to provide a well balanced research program.

◆

▶▶▶ FITTING TRIBUTE was given to Lieut. Wally Wilson when the New York Division of the Salesmen's Association of the Paper Industry devoted its October 15 meeting to a memorial. Lieut. Wilson was lost at sea when his ship was torpedoed in the Pacific. He was with Bryant Paper Company, when he entered the service, and his memory will be preserved in the Wally Wilson Golf Trophy, in competition last summer for the first time, when it was won by Herbert J. Simmonds, of the Fitchburg Paper Company.

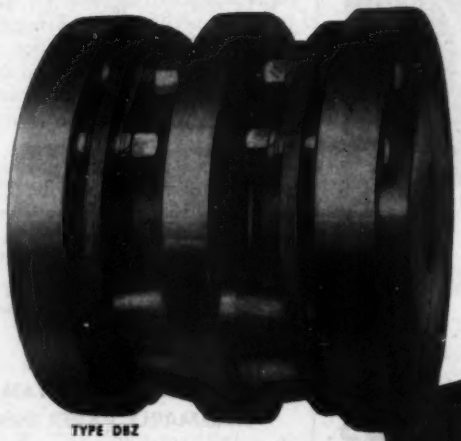
◆

NEW ASSOCIATION FORMED BY PAPER-MILL REPR. IN NINE SOUTHERN STATES

At the concluding session of a two-day meeting held in Jacksonville, Florida, November 5-6, pulp and paper mill representatives from nine states

THOMAS *Flexible* COUPLINGS

. . . proven to be 100% dependable on wood choppers, centrifugal pumps and other heavy duty machinery in the paper manufacturing industry



TYPE DBZ

Today's modern high-speed paper manufacturing machinery requires couplings with all the important features built into the couplings designed by Thomas Engineers.

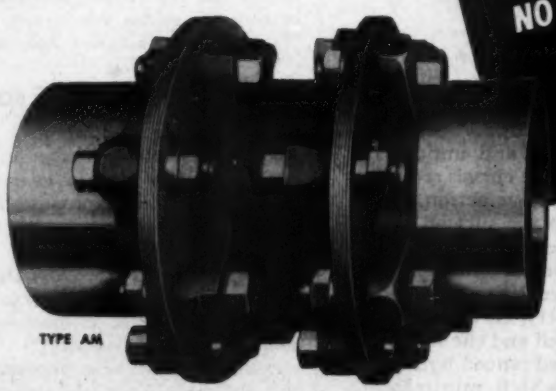
The Longer Life of Thomas Flexible Couplings, without costly interruptions and replacements will add much to Your Operating Profits!

Thomas Couplings are in perfect balance under all conditions of misalignment.

BACKLASH, FRICTION, WEAR and CROSS-PULL ARE ELIMINATED

NO LUBRICATION IS REQUIRED!

Torsional characteristics remain constant regardless of length of service.



TYPE AM

Thomas All-Metal Flexible Couplings do not depend on springs, gears, rubber or grids to drive. All power is transmitted by direct pull.

Write for our Complete Engineering Catalog!

THOMAS FLEXIBLE COUPLING COMPANY

WARREN, PENNSYLVANIA

DEVELOPED

FROM A SUCCESSFUL LINE OF SOLIDS-HANDLING PUMPS

MORRIS

Centrifugal Black Liquor Pumps

Black Liquor is essentially minute solids suspended in a colloidal liquid. It is abrasive and corrosive, with a tendency to become highly viscous. That's why Black Liquor pumps based on clear-liquid design are inadequate and uneconomic, requiring excessive servicing and replacement.

Efficient Black Liquor pumps require the characteristics of a slurry or sludge pump—the design on which all MORRIS BLACK LIQUOR PUMPS are based. The design, in fact, on which MORRIS has established an enviable reputation for sustained high performance and long life.

It's the design that does It . . .

Casting thickness at least double that of conventional clear-liquid pumps. Suctions of large diameter and impellers with easy entrance curves reduce friction and abrasive action. External vanes on the suction side of the exclusive Morris impeller balance the pressure inside the pump and prevent excessive circulation of gritty carbon solids between the shell and the suction disc liner—an advanced hydraulic principle which minimizes wear and leakage at the intake and contributes to pumping efficiency.

Morris Metals resist abrasion and endure well in long, hard service. Wearing parts can be replaced, when required, by ordinary mechanical skill, and without disturbing the shaft or bearings. Morris standardized parts keep these pumps in efficient operation throughout years of severe service. Write.

MORRIS MACHINE WORKS
BALDWINSVILLE, N. Y.
Branch Offices in Principal Cities

MORRIS CENTRIFUGAL PUMPS

formed the Southern Pulp and Paper Association as a permanent organization. National Container Corporation was host to the visitors.

Named to serve on an executive committee were C. W. Howard, Charleston (W. Va.), of the West Virginia Pulp and Paper Company; George W. Merriman, Mobile (Ala.), International Paper Company; O. J. Sherman, Bogalusa (La.), Gaylord Container Corporation; H. E. Newbury, Pisgah Forest (N. C.), Ecusta Paper Corporation; and D. J. Brett, Jr., Jacksonville, representing the National Container Corporation.

Mr. Newbury was selected as chairman of the executive committee and Mr. Brett was named secretary-treasurer.

The Association will hold its next meeting July 8 in Asheville (N. C.), at which the Champion Paper and Fibre Company, and the Ecusta Paper Corporation will be hosts. F. M. Furness will serve as co-chairman with Newbury at the Asheville gathering.

◆

A CHARTER CERTIFICATE IS PRESENTED BY NAM TO ALBEMARLE PAPER MFG. CO.

At the annual banquet of the Virginia Manufacturers' Association in Roanoke, Virginia, a charter membership certificate from the National Association of Manufacturers was presented to the Albemarle Paper Manufacturing Company, of Richmond.

The Albermarle company was one of the companies which helped to organize NAM fifty years ago, and is among the 360 charter members celebrating the golden anniversary of the National Manufacturers Association.

◆

MATERIALS HANDLING SOCIETY

At a dinner meeting held in the Roosevelt Hotel in Pittsburgh, October 8, a group of men interested in materials handling voted to form a society. The objectives voted for the Society included:

1—To further the application of good materials handling practices

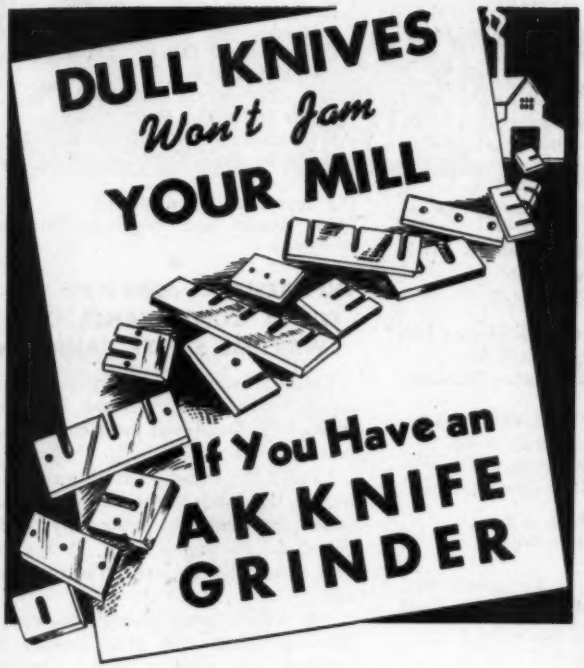
2—To encourage an interchange of ideas among the members

3—To promote education and training in the science and practice of practical co-ordinated materials handling

4—To arrange for the collection and dissemination of information relating to all phases of materials handling

Temporary officers elected were: Temporary Chairman, T. O. English, Aluminum Company of America; Temporary secretary, Richard Rimbach, Materials Publishing Company.

DULL KNIVES *Won't Jam* YOUR MILL



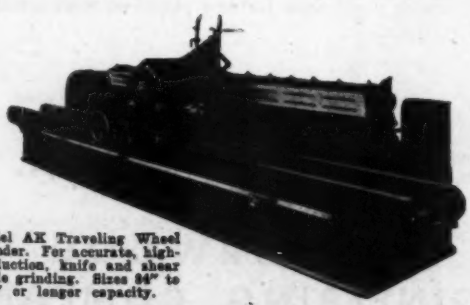
If You Have an AK KNIFE GRINDER

WISE mill managers buy good blades, in the first place—and *keep* them in top cutting condition with a Hanchett AK Knife Grinder!

It's completely automatic—no need for an experienced operator. Simply place the blade in position, adjust the controls, and the AK does the rest—in a matter of moments.

Blades are back on the job in a hurry, with perfectly straight, smooth edges that increase the time between grinds, and keep pace with stepped-up production quotas.

Find out more about the AK Knife Grinder today. Ask for your copy of Bulletin 178-11PK and see for yourself how the AK can solve your knife grinding troubles.



Model AK Traveling Wheel Grinder. For accurate, high-production, knife and shear blade grinding. Sizes 84" to 220" or longer capacity.

HANCHETT MANUFACTURING CO.
BIG RAPIDS MICHIGAN U.S.A.

For HIGH TINTING *STRENGTH*

USE

PARIS 2 *BLACK*

made EXCLUSIVELY FOR PAPER
• A COLUMBIAN COLLOID •

The high tinting strength of PARIS 2 Black means less pigment to secure a desired shade. This together with exceedingly small particle size contributes to unimpaired strength in the finished stock. Other desirable characteristics are:

EASY DISPERSION
FREEDOM FROM OILINESS
UNIFORMITY

For JET BLACK PAPERS and GRAY-TINTED STOCKS

TECHNICAL INQUIRY IS INVITED

COLUMBIAN CARBON CO. • BINNEY & SMITH CO.
MANUFACTURER DISTRIBUTOR
41 EAST 42nd STREET • NEW YORK 17, N. Y.

SAFETY

SAFETY SCORES

▶▶▶ THE PAPER INDUSTRY Safety Contest for 1945-46 completed the first three months with an average frequency rate of 18.53—a 9 per cent decrease over the same period of last year. Ten companies dropped from the perfect record list the third month (September), leaving the thirty-five mills listed below with a clear record.

Division I—Pulp and Paper Mills

Group A

Kimberly-Clark Corp., Niagara, Wis.

Group B

Consolidated Paper Corp., Ltd., Port Alfred, Quebec, Can.
The Flintkote Co., Meridian, Miss.
United States Gypsum Co., Greenville, Miss.
**Brunswick Pulp & Paper Co., Brunswick, Ga.

Group C

Price Bros. & Co., Ltd., Jonquiere Mill, Quebec, Can.
Certain-teed Products Corp., E. St. Louis, Ill.
*Bemis Brothers Bag Co., Peoria, Ill.
Certain-teed Products Corp., Niagara Falls, N. Y.
Certain-teed Products Corp., Richmond, Calif.
*The Mead Corp., Harriman, Tenn.

Group D

United States Gypsum Co., Lisbon Falls, Maine.
The Flintkote Co., Little Ferry, N. J.
Strathmore Paper Co. (Woronoco Mill No. 2), West Springfield, Mass.
Central Fibre Products Co., Tama, Iowa.
Marathon Corp., Ashland, Wis.
Certain-teed Products Corp., Kansas City, Mo.
*The Mead Corp. (Wheelwright Div.), North Leominster, Mass.
E. I. duPont de Nemours & Co., Inc. (Russell Plant).
Strathmore Paper Co. (Woronoco Mill No. 1), West Springfield, Mass.
Container Corp. of America, Wilmington, Del.
*The Mead Corp., Nashville, Tenn.
**Ward Paper Co., Merrill, Wis.
E. I. duPont de Nemours & Co., Inc. (Newhall Plant), Wilmington, Del.

Division II—Paper & Board Remanufacturing

Group A

The Flintkote Co., E. Rutherford, N. J.
Container Corp. of America, Cleveland, Ohio.

Group B

Fort Wayne Corrugated Paper Co., Hartford City, Ind.
Old Colony Envelope Co., Westfield, Mass.
Bird & Son, Inc. (Roofing Plant), Chicago.
Bird & Son, Inc. (Roofing Plant), Shreveport, La.
Fort Wayne Corrugated Paper Co., Chicago.
Kimberly-Clark Corp. (Atlas Mill), Appleton, Wis.
The Flintkote Co. (Hollywood Paper Box Div.), Los Angeles, Cal.
Freeman Paper Co., Green Bay, Wis.
Bay West Paper Co., Green Bay, Wis.

(*) September report missing.
(**) August and September reports missing.

◆

THE PRESIDENT ASKS NSC FOR A CONTINUANCE OF WARTIME SAFETY CAMPAIGN

Quoted below are excerpts from a letter written by President Truman to Ned H. Dearborn, president of the National Safety Council:

"Peace has ended premeditated killing on the battle front but it has not ended unintentional killing by accidents, on the home front. It has, in fact, ironically increased the accident toll.

"A nation great enough to win a war for freedom is great enough to preserve the freedom won. One of these freedoms is security from needless deaths, destruction, and suffering. Accidents destroy this security. America proved during the war that accidents can be reduced, even under the most difficult conditions, if we really want to reduce them."

52 YEARS
A LEADER
and
still leading

Get a Good Start
And a Good Finish With
NORWOOD
WATER FILTERS AND
PAPER FINISHING MACHINERY

Since well back into the past century The Norwood Engineering Company has brought to the papermaking industry the engineering skill which branded Norwood a pioneer. Norwood Filters, Calenders and Paper Finishing Machines in streamlined new designs are today blazing new trails. Include them in your plans for new plants or modernization of older facilities.

For valuable assistance and engineering service, write us fully about your expansion or modernization plans. Our Norwood engineers are fully versed in all papermaking and paperconverting problems and their solution.
P-4

The NORWOOD
ENGINEERING COMPANY
16 N. MAPLE ST. FLORENCE, MASS.

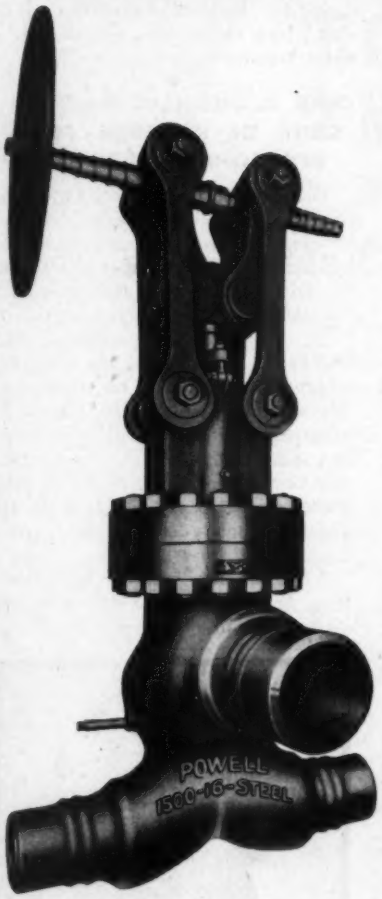
Safeguard your Boiler Installations with POWELL NON-RETURN VALVES

The primary consideration in the design and engineering of all Powell Non-return Valves is to insure the absolutely tight automatic closure so necessary to provide unfailing protection for your boiler installations. Body and bonnet structures are rugged and all parts are machined to perfect tolerances for the temperature limitations of the particular job involved. Chattering or fluctuation of disc level within the valve is reduced to a minimum.

Powell Non-return Valves are provided with thrust bearings or gears. Large sizes may be toggle operated, affording perfect manual control, if required. If desirable, electric motor operators for remote control can be provided.

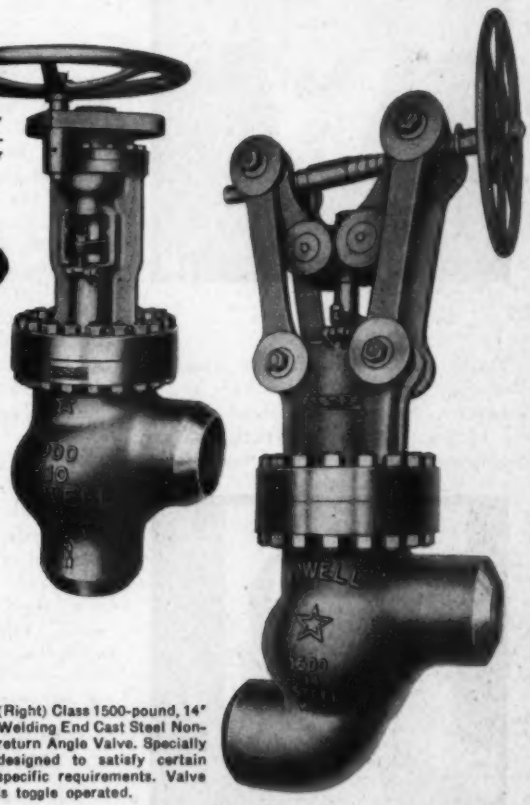
Today, throughout the country, paper mills operating their own power plants rely on the unfailing performance of Powell Non-return Valves.

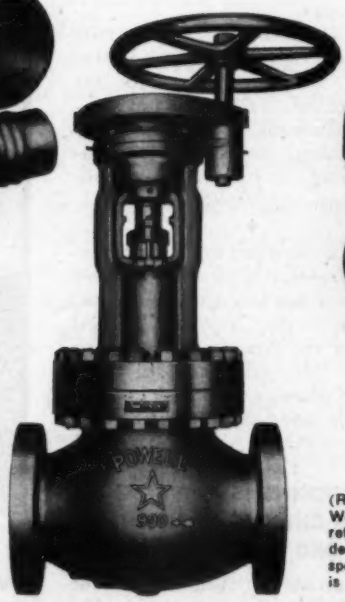
The Wm. Powell Company, Cincinnati 22, Ohio



A Powell answer to the demand for higher pressure and higher temperature flow control equipment. This Class 1500-pound Cast Steel Non-return Angle Valve with welding ends, said to be one of the largest of its kind ever built, has 16" outlet and two 12" inlets. Because of special streamline designing the pressure drop through the valve is reduced to the minimum. Valve is toggle operated.

(Right) Class 900-pound, 10" Welding End Cast Steel Non-return Angle Valve. Spur Gear operated.





Class 900-pound, Flanged End Cast Steel Non-return Globe Valve. Spur Gear operated.

(Right) Class 1500-pound, 14" Welding End Cast Steel Non-return Angle Valve. Specially designed to satisfy certain specific requirements. Valve is toggle operated.

POWELL VALVES

NAMES *in the* NEWS

Personals

UNION BAG ANNOUNCES IMPORTANT EXEC. CHANGES

Announcement has just been made of the election of H. S. Daniels as executive vice president of the Union Bag and Paper Corporation, New York. Mr. Daniels was vice president in charge of sales since 1933, and a director of the company since 1934.

H. S. Daniels

He succeeds H. P. Carruth who has resigned to enter private business as a consultant. However, Mr. Carruth will give his entire time to Union Bag in an advisory capacity for several months, and it is expected he will continue in this capacity on a part time basis. He will also remain a director of the company.

G. W. E. Nicholson, former resident manager of the company's Savannah plant, was named vice president in charge of manufacturing; and Donald J. Hardenbrook, formerly assistant to the president, was elected vice president in charge of Industrial and Public Relations, and Woodlands.

G. W. E. Nicholson

Donald J. Hardenbrook

◆

▶▶▶ With headquarters at the executive sales office in Pittsburgh *Harry W. Gliechert* has been appointed director of sales of the Columbia Chemical Division of the Pittsburgh Plate Glass Company. Mr. Gleichert has been with the Columbia Chemical Division since 1920, and assistant director of sales since 1937.

◆

C. W. WILKINS IS NOW CHIEF CHEMIST WITH THE BEDFORD PULP & PAPER CO.

The position of chief chemist of Bedford Pulp & Paper Company, Big Island, Virginia, is now filled by Colbert W. Wilkins, formerly assistant chief chemist of National Container Corporation, Jacksonville, Florida.

Mr. Wilkins went with National Container when the plant started up in 1938. He was first boiler water operator; then he was placed in the laboratory doing analytical work. Later he was promoted to the position of assistant chief chemist. He graduated from the University of Florida with a degree in chemical engineering; since which time he has been specializing in water treatment and research.

◆

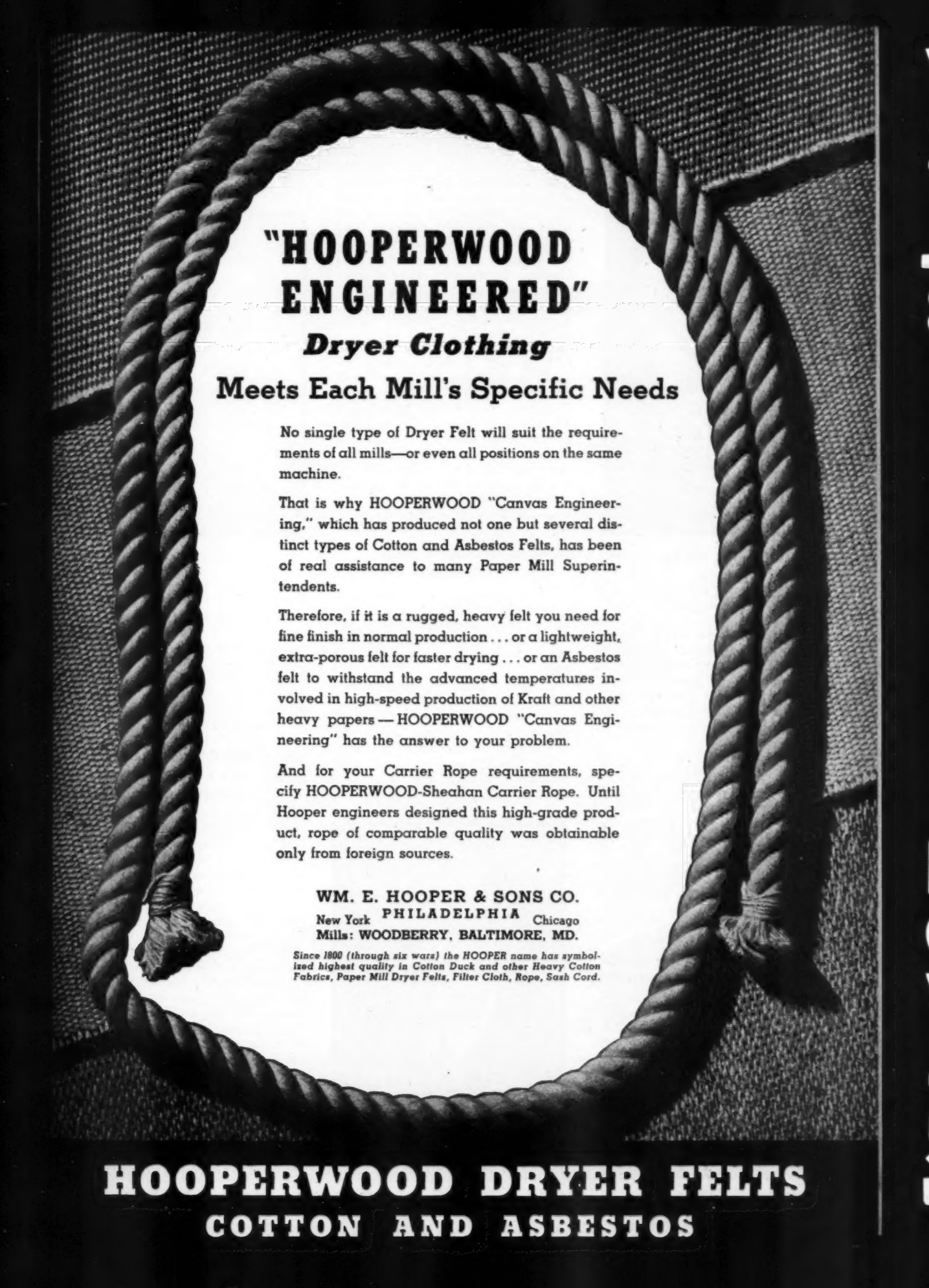
CHAS. A. DICKHAUT MADE CHIEF OF RESEARCH AND DEV., JOHN WALDRON CORP.

The appointment of Charles A. Dickhaut as Chief of Research and Development has just been announced by the John Waldron Corporation. Mr. Dickhaut has been associated with the company for nearly twenty years.

At the age of seventeen, Mr. Dickhaut's interest in papermaking prompted him to enter an apprenticeship with the Oxford Paper Company, subsequently, for a number of years, he was associated with the Martin Cantine Company, manufacturer of high grade coated papers, and with the Tissue Company at Saugerties, New York.

After serving in the First World War, he returned in 1919 to become night superintendent of the Martin Cantine Company's plant and remained there until 1926, when he joined the technical staff of the John Waldron Corporation. His present appointment to head their company's Research and Development Department is in line with a plan to enlarge the research and development work to meet an increasing need for newer and better processing methods and machines.

Charles A. Dickhaut



"HOOPERWOOD ENGINEERED"

Dryer Clothing

Meets Each Mill's Specific Needs

No single type of Dryer Felt will suit the requirements of all mills—or even all positions on the same machine.

That is why HOOPERWOOD "Canvas Engineering," which has produced not one but several distinct types of Cotton and Asbestos Felts, has been of real assistance to many Paper Mill Superintendents.

Therefore, if it is a rugged, heavy felt you need for fine finish in normal production . . . or a lightweight, extra-porous felt for faster drying . . . or an Asbestos felt to withstand the advanced temperatures involved in high-speed production of Kraft and other heavy papers — HOOPERWOOD "Canvas Engineering" has the answer to your problem.

And for your Carrier Rope requirements, specify HOOPERWOOD-Sheahan Carrier Rope. Until Hooper engineers designed this high-grade product, rope of comparable quality was obtainable only from foreign sources.

WM. E. HOOPER & SONS CO.
New York **PHILADELPHIA** Chicago
Mills: WOODBERRY, BALTIMORE, MD.

Since 1800 (through six wars) the HOOPER name has symbolized highest quality in Cotton Duck and other Heavy Cotton Fabrics, Paper Mill Dryer Felts, Filter Cloth, Rope, Sash Cord.

HOOPERWOOD DRYER FELTS

COTTON AND ASBESTOS

RUTLEDGE RESIGNS FROM PRESIDENCY OF SUTHERLAND

Robert E. Rutledge has announced his resignation as president of the Sutherland Paper Company, Kalamazoo, Michigan, a position he has held since February of 1942, in order to

Robert E. Rutledge

make other business connections. The resignation is to be effective December 31.

Mr. Rutledge joined the Sutherland organization in October of 1928 as salesman after a year and half with the Mac-Sim-Bar Paper Company, Otsego. He became sales manager in 1932, was elected vice president of the company in 1935, and was placed on the board of directors in 1937.

Three years later he was named executive vice president, and in 1942 when L. W. Sutherland, one of the founders of the company, resigned to become chairman of the board, Mr. Rutledge was elected president.

Mr. Rutledge has always been active in civic affairs, and was elected to two terms as president of the Chamber of Commerce during the difficult war years.

◆

CHAS. W. STEWART IS NOW ASSOCIATED WITH THE CLARK MFG. CO. AS VICE PRES.

The appointment of Charles W. Stewart as vice president in charge of sales has been announced by The Clark Manufacturing Company, Cleveland. In this connection, Mr. Stewart will work closely with the company's vice president, John L. Mainwaring in extending the sales and distribution of the company's steam specialties and Clark Fluid Controls. Mr. Mainwaring will continue to maintain his contacts with the sales force and distribution system, but will devote an increasing amount of his time to engineering research and to production development and application.

Mr. Stewart comes to the Clark company after having been associated with the Hoffman Specialty Company of Indianapolis for the past 19 years. He was director of that company and when leaving filled the office of vice president in charge of sales. He also has served as president of the Steam Heating Equipment Manufacturers' Association since 1942, and is a member of the American Society of Heating and Ventilating Engineers.

◆

▶▶▶ Eastern Canadian points recently were visited by *Almer Herb*, president of the Westminster Paper Company, Ltd., New Westminster (B. C.) and *John Ashby*, technical director of the company. The purpose of the tour was to obtain information regarding high-speed equipment which will be required shortly in the new plant now under construction for the company at New Westminster.

◆

ROBT. L. FITTS NEW PRES. OF PAPER BAG INSTITUTE

At a meeting held in New York City recently, Robert L. Fitts, president of the Southern Advance Bag and Paper Company of Boston, was elected president of the Paper Bag Institute, Inc.

In normal times, the Institute represents an industry doing approximately ninety million dollars worth of business and consuming more than 600,000 tons of kraft paper a year.

Mr. Fitts was a member of the WPB Pulp Allocation Committee during the war.

Robert L. Fitts

PETERSON RETURNS TO DOW TO WORK ON NEW COATINGS

After three years in the Army, Norman R. Peterson, who first joined the Dow Chemical Company in 1936 as a chemist, has returned to that company to take up new duties specializ-

Norman R. Peterson

ing in development work on some of the newer Dow coatings derived from styrene and Saran.

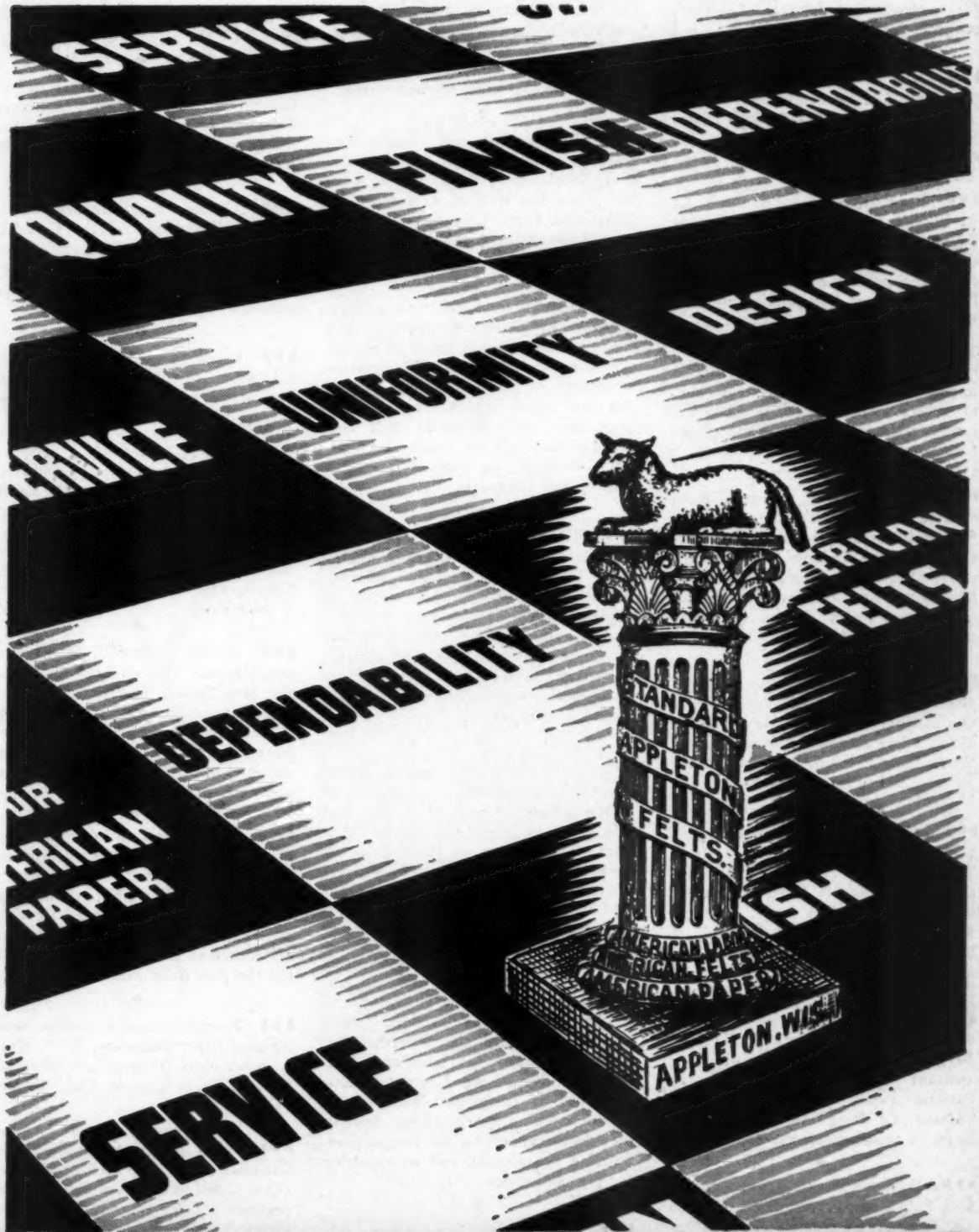
Shortly after his graduation from North Dakota State, where he took the protective coating course, Mr. Peterson joined the Dow Company at Midland as a chemist assigned to the cellulose laboratory for the study and development of ethylcellulose coatings.

◆

CHAS. WESTPHALEN MADE A VICE PRESIDENT AND DIRECTOR OF MASONITE

At the annual meeting of stockholders of the Masonite Corporation, held at Wausau, Wisconsin, Charles H. Westphalen, who has been associated with the company since its inception, was elected a vice president and director of the company. He also was appointed general manager of the Laurel (Miss.) plant.

Mr. Westphalen went to Laurel in 1920 with the late William H. Mason to assist him in naval stores operation and research. He worked with Mr. Mason in the development of the Masonite process and when the company was formed in 1926 to manufacture pressed wood products, Mr. Westphalen took an important part in the design and construction of the equipment and plant. In 1926, he became superintendent of production and in 1940 he was appointed production manager, a position he held until he became acting general manager of



APPLETON WOOLEN MILLS

APPLETON · WISCONSIN

the plant in June of this year, due to the resignation of John H. Thickens, resigned because of ill health.

◆

▶▶▶ Now associated with Sorg Pulp Company, Ltd., Port Mellon (B. C.), is *J. G. D'Aoust*, formerly with Heaps Engineering, New Westminster (B. C.).

◆

▶▶▶ Prior to his service in the R. C. A. F., *Bob Costello* was with Canada Paper Company, Ltd., Windsor Mills, Canada. He now has been appointed control superintendent at Brompton Pulp and Paper Company's new Red Rock (Ont.) plant.

◆

▶▶▶ Probably the oldest papermaker in the Connecticut Valley (in years of experience), *Michael J. Kelly* recently retired from the Keith Paper Company in Turners Falls (Mass.).

◆

▶▶▶ *Freeman Perry*, returning from enlisted service with the Canadian Armored Corps, has accepted a position with the Colonial Board Company, Manchester (Conn.). Prior to his enlistment, Mr. Perry was plant engineer of Forest Products Laboratories, Montreal (Can.).

◆

▶▶▶ Leaving his position with Anglo-Canadian Pulp & Paper Mills, Quebec City, *Phil Rolleston* has joined Moore Research and Service Company, Inc., Niagara Falls, with which Dr. John Campbell is connected.

◆

▶▶▶ Announcement has been made by Stein, Hall & Company, Inc., New York, that *John Younger* has been appointed head of its Paper Laboratory in Long Island City. Mr. Younger was associated with the Institute of Paper Chemistry, Appleton, Wisconsin, for four and a half years.

◆

▶▶▶ After naval service aboard a sub-chaser, *Lt. Edward P. "Terry" Bagg* has returned to his position as assistant general manager of the Parsons Paper Company, Holyoke (Mass.). Lt. Bagg's father, Dr. E. P. Bagg, is president of the company.

◆

▶▶▶ Formerly assistant manager at Sorg Pulp Company, Ltd., Port Mellon (B. C.), *L. G. Harris* has been appointed superintendent of the Red Rock Division of Brompton Pulp & Paper Company.

◆

▶▶▶ Vice president of Crown Zellerbach Corporation, *G. E. Young*, speaking in San Francisco recently, declared that the company's mills and logging operations are undermanned and that the firm's shortage of paper supply is due entirely to the shortage of labor and logs. Mr. Young stated the company has fewer employees now than at any other time since the war started.

◆

▶▶▶ Plant layout and construction plans on a series of new additions are being developed by *Edgar R. Lea* who has joined the staff of Canadian International Paper Company at Garineau Mills, Quebec, as junior mechanical engineer.

◆

▶▶▶ Formerly in charge of Geon latex development, *George W. Flanagan* has been made manager of the B. F. Goodrich Chemical Company development laboratory in Cleveland. Mr. Flanagan will direct the activities of a large laboratory technical staff engaged in materials and process development work on the company's resins, plastics and chemicals.

◆

▶▶▶ The office of treasurer of Pennsylvania Salt Manufacturing Company, Philadelphia, has been given to Warner R. Over, who has served as secretary and assistant treasurer of the company since 1940 Mr. Over now becomes secretary-treasurer. This change was made following the retirement of L. A. Smith, who served as vice president and treasurer.

◆

▶▶▶ A number of Canadian paper men in the Royal Rifles were captured in Hong Kong. Among these were Lt. Col. John H. Price and his brother, Capt. C. E. Price of Price Bros. & Company, Ltd., Quebec, who have been liberated and are now at home.

◆

▶▶▶ Active in the pulp and chemical industries of the Pacific Northwest for several years, *Thomas E. Moffitt*, formerly of the Hooker Electrochemical Company, Tacoma, Washington, has joined the Weyerhaeuser Timber Company as sales executive for a number of wood-base products developed at Longview, Washington. Products being marketed at present include thermosetting hot compression molding compounds, and an extender for plywood glues.

◆

▶▶▶ After resigning as deputy director of the Paper Division of the WPB, Charles J. Dynes has accepted a position with Hollingsworth & Whitney Company, Boston. He will be located at the company's Boston office. Before going to Washington, Mr. Dynes was with Sorg Paper Company, Middletown, Ohio.

▶▶▶ *Dr. J. W. Boyes* has left Ontario Paper Company to take a teaching position at McGill University.

◆

▶▶▶ The new mill manager of Alliance Paper Mills, Ltd., Merritton, Ontario, is *R. C. Shearer*. He was formerly with the St. Regis Paper Company.

◆

▶▶▶ The new superintendent of the control department of the Canadian International Paper Company, Three Rivers (Que.) is *Arthur J. Edwards*, formerly with New Brunswick International Paper Company.

◆

▶▶▶ Formerly with E. B. Eddy Company, Hull (Que.), *Gordon Sutherland* has joined Ontario Paper Company at Thorold (Ont.).

◆

▶▶▶ After ten years as general superintendent of the Chesapeake Paperboard Company, Baltimore, Chauncey E. Cole has resigned to take a much needed rest. Friends who wish to communicate with him may address Mr. Cole at 6501 Liberty Road, Baltimore 7, Maryland.

◆

▶▶▶ *Robert E. Barrett, Jr.*, of Holyoke (Mass.) has succeeded his father, the late Robert E. Barrett, Sr., as president and treasurer of the Holyoke Water Power Company. This company owns the canal system which furnishes water power to the Holyoke paper mills.

◆

▶▶▶ A new staff member of Foster D. Snell, Inc., consulting chemists and engineers, Brooklyn, New York, is *Chester A. Snell*. Dr. Snell has been connected with the Chemical Development Division, Aluminum Company of America, East St. Louis, Illinois, for the past three years.

◆

▶▶▶ Formerly with Canadian International Paper Company, *Dr. F. Kraft* is now chief chemist of Marathon Paper Mills of Canada, Ltd., Toronto (Ont.).

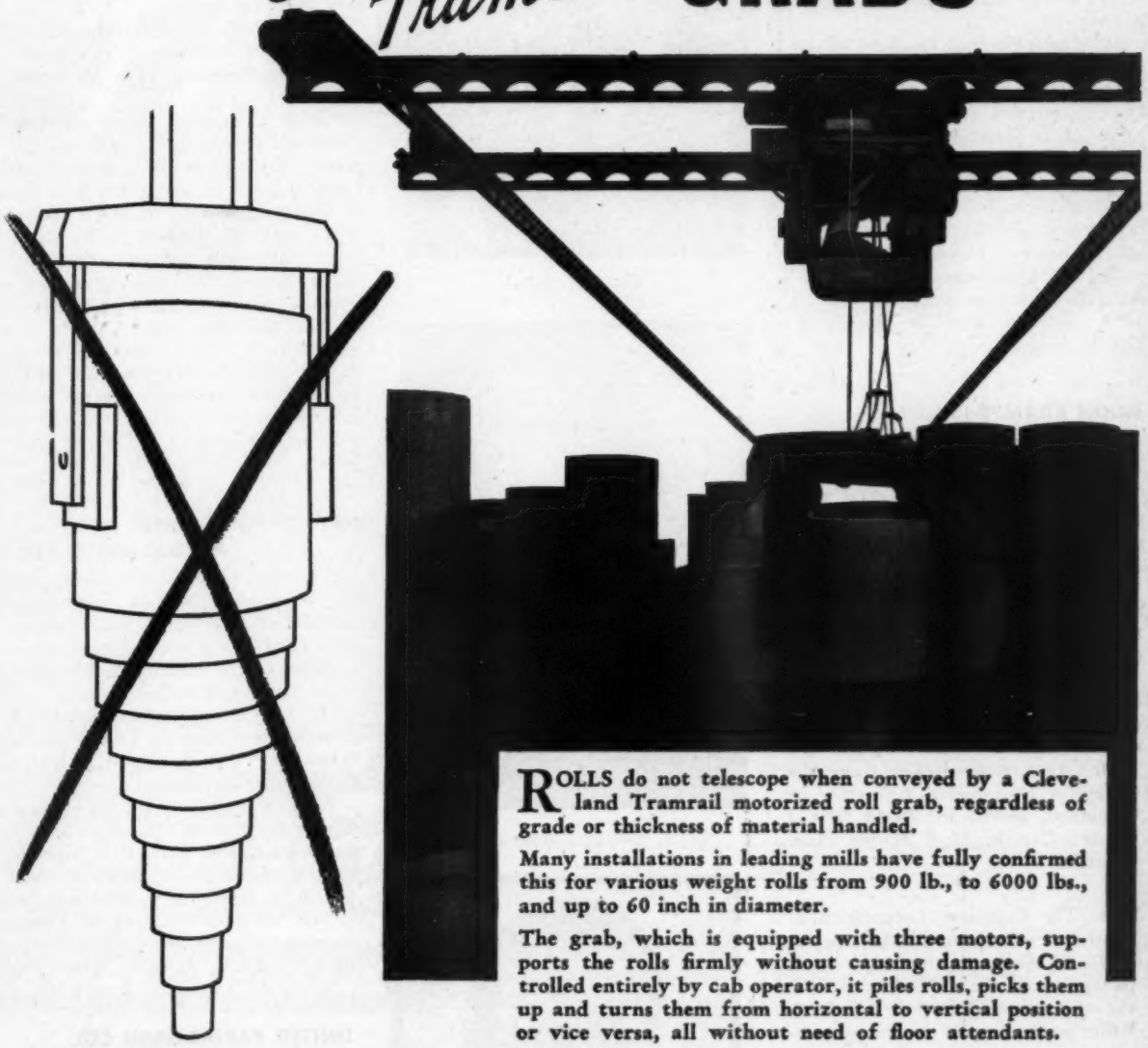
◆

▶▶▶ After serving with the Anglo-Canadian Pulp & Paper Mills, Ltd., (Que.), and Allied War Supplies Corporation, *Harry Mason* is now with Howard Smith Paper Mills at Cornwall (Ont.).

◆

▶▶▶ Announcement is made that *F. H. Hoge*, executive vice president of W. A. Jones Foundry and Machine Company, Chicago, has been elected president to succeed *William Coleman* who resigned.

No Telescoping Rolls *with* *Cleveland Tramrail* GRABS



ROLLS do not telescope when conveyed by a Cleveland Tramrail motorized roll grab, regardless of grade or thickness of material handled.

Many installations in leading mills have fully confirmed this for various weight rolls from 900 lb., to 6000 lbs., and up to 60 inch in diameter.

The grab, which is equipped with three motors, supports the rolls firmly without causing damage. Controlled entirely by cab operator, it piles rolls, picks them up and turns them from horizontal to vertical position or vice versa, all without need of floor attendants.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
1185 East 283rd St. Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

ALLIS-CHALMERS ANNOUNCES SEVERAL JOB CHANGES

Recent appointments in the Allis-Chalmers organization (Milwaukee) are: R. N. Landreth, assistant to the vice president of the general machinery division; W. A. Yost, Jr., assistant manager of the steam turbine department; and Arthur R. Tofte, manager of the advertising and public relations department.

Mr. Landreth, who has been special representative for the company, will continue to reside in Washington, D. C., and will function on assignments from Milwaukee.

Mr. Yost was formerly in charge of the marine turbine division production and directed the expansion of this department into its vast output during the war.

Mr. Tofte has been a member of the department he now will manage, since 1938, and he succeeds George J. Callos, resigned.

◆

HUGH KRAMPE IS NEWLY APPOINTED SALES MANAGER OF RODGERS HYDRAULIC

The newly appointed general sales manager of Rodgers Hydraulic Incorporated, Minneapolis, is Hugh Krampe. Mr. Krampe recently was with Maxwell and Moore, Inc., as manager of the industrial marketing division. Prior to that, he served the Armstrong Cork Company successively as sales engineer at Atlanta, Louisville, and Milwaukee; district manager at Buffalo and Chicago; and divisional assistant general sales manager at the main office.

Mr. Krampe graduated from the College of Engineering, University of Cincinnati, served in World War I and is a Captain, U. S. Marine, Hon. Retired.

◆

▸▸▸ The Container Corporation of America has announced the election of *Ira C. Keller* to the board of directors to fill the vacancy caused by the retirement of John J. Brossard. Mr. Keller has been with the company for nineteen years and is vice president in charge of the company's eastern division.

◆

▸▸▸ After serving with the WPB in Washington as deputy chief of the inorganics branch of the Chemicals Bureau, *John C. Leppert* has become associated with the Southern Alkali Corporation, Corpus Christi, Texas, as assistant to the operating vice president. Before going to Washington in 1942, Mr. Leppert was connected with the Columbia Chemical Division of Pittsburgh Plate Glass Company. Southern Alkali is owned jointly by Pittsburgh Plate Glass Company and American Cyanamid and Chemical Corporation.

Arthur R. Tofte

Hugh Krampe

Ira C. Keller

◆

DICALITE ADDS TO SALES STAFF

The following additions to the sales and service engineering staff of The Dicalite Company, New York City, have been announced:

Gordon C. Garland, with extensive general sales engineering experience, will cover the New York Metropolitan Area.

Leo P. Newtown, whose previous connections have been mostly in the paper industry, is working in the New England States in connection with use of Dicalite materials in paper plants.

Marshall W. Ramsey, with both paper and textile industry experience, and lately with the Philadelphia Quartermaster Depot, is covering territory in the Philadelphia area.

Dwight S. Masters, just out of an Army captain's uniform, and with long previous technical experience in the paint and varnish industry, is now covering territory in Northern New Jersey.

◆

NEW APPOINTMENTS AT PACIFIC MILLS, LTD.

Peter S. Frattinger, B. Comm., B. Sc., has been appointed plant engineer of Pacific Mills, Ltd., Ocean Falls (B. C.) He formerly was plant engineer at the Howard Smith Paper Mills, Cornwall (Ont.), prior to which he spent two years inspecting material in war plants in the United States and Canada for the British Purchasing Commission.

Another Pacific Mills appointment is that of John W. Parr as chief industrial engineer. Mr. Parr attended the University of Toronto, after which he joined the engineering staff of the Sangamo Company of Toronto, and later became industrial engineer for Boeing Aircraft, Vancouver.

◆

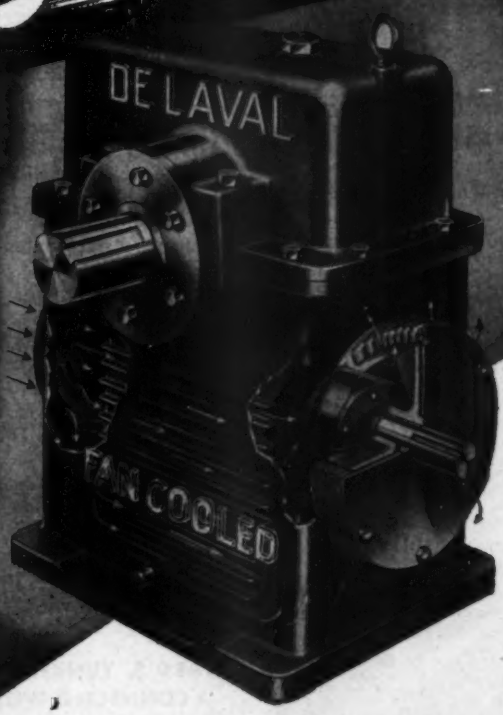
UNITED PAPERBOARD CO. APPOINTS CUTLER SUPT. OF LOCKPORT (N. Y.) MILL

The appointment of H. S. Cutler as superintendent of the Lockport (N. Y.) mill of the United Paperboard Company, has been announced. Mr. Cutler succeeds Samuel D. Hodge who became superintendent of the company's mill at Thomson, New York.

Mr. Cutler has been active in paperboard mill work for twenty-six years. He was with the Upson Company at Lockport for the past seven years, previous to which time he was in

SOON AVAILABLE

FAN-COOLED



HIGHER CAPACITY

Capacity is approximately doubled for all ratios at 1750 r.p.m. as compared with standard heavy duty units of the same frame size.

LOWER COST PER HORSEPOWER

Operation at higher ratings permits the use of correspondingly smaller and less costly units.

SMALLER SIZE

Reduction of as much as two frame sizes in some instances. The use of smaller, lighter units results in a saving both of floor space and of critical materials needed for the war effort.

The *NEW* DE LAVAL *FAN-COOLED* WORM GEAR SPEED REDUCER

will soon be available in a complete line of sizes. Send for literature now being prepared.

1149

TURBINES · HELICAL GEARS and WORM GEAR SPEED REDUCERS · CENTRIFUGAL PUMPS · CENTRIFUGAL BLOWERS and COMPRESSORS · IMO OIL PUMPS

WORM GEAR DIVISION

DE LAVAL

STEAM TURBINE COMPANY · TRENTON 2, NEW JERSEY

SALES OFFICES: ATLANTA · BOSTON · CHARLOTTE · CHICAGO · CLEVELAND · DENVER · DETROIT · DULUTH · EDMONTON · GREAT FALLS · HAVANA · HELENA · HOUSTON · KANSAS CITY · LOS ANGELES · MONTREAL · NEW ORLEANS · NEW YORK · PHILADELPHIA · PITTSBURGH · ROCHESTER · ST. PAUL · SALT LAKE CITY · SAN FRANCISCO · SEATTLE · TORONTO · TULSA · VANCOUVER · WASHINGTON, D. C. · WINNIPEG

charge of the United Paperboard mill at Urbana, Ohio. He is a graduate of Purdue University and a veteran of both World Wars and until September, 1944, was a Major serving with the Army's Service of Supply.

As superintendent of the Thomson mill, Mr. Hodge is now operating the largest board manufacturing unit of the company. Prior to joining United Paperboard, he was associated for twenty-three years with the Gardner-Richardson Company, Middletown, Ohio.

◆

DR. WELLMAN WITH CALCO DEVELOPMENT DEPARTMENT

The Calco Chemical Division (American Cyanamid Company), Bound Brook, New Jersey, announces the addition to its Development Department staff of Dr. Victor E. Wellman, who will also serve as technical advisor to the sales department on matters relating to intermediates and chemicals.

Dr. Victor E. Wellman

Dr. Wellman, recently connected with R. W. Greff & Company, Inc., New York, was for fifteen years with the B. F. Goodrich Company, Akron, Ohio.

◆

STANLEY O'CONNOR IS MANDO ASST. RESEARCH DIRECTOR

After a ten-year residence in Washington, D. C., where he served as manager of government sales for Mando, Stanley J. O'Connor has been appointed assistant to the director of research for Minnesota and Ontario Paper Company. M. S. Wunderlich is the research director.

Mr. O'Connor's first connection with Mando industries dates back to 1933 when he became associated with the Insulite Division at Kansas City. He was later assistant sales manager at Chicago, and just before going to Washington he was made assistant to the vice president of Mando. While in the Capital City, Mr. O'Connor helped in clearing priorities and approvals for equipment to be used in the company's $6,000,000 modernization and expansion program recently announced.

◆

MICHIGAN ALKALI DIV. ANNOUNCES PROMOTIONS

The following promotions, effective January 1, are announced by Bert Cremers, vice president in charge of sales, Michigan Alkali Division of Wyandotte Chemical Corporation:

Carl VanLaaten will continue as the company's special representative to the glass industry and will give assistance to the Chicago, St. Louis, and Cincinnati offices.

Mel Thompson, formerly manager of the Detroit office, transfers to Chicago as manager.

Horace Brunner, of the sales staff, becomes manager of Detroit city sales office.

M. J. Conway, veteran Michigan Alkali salesman in New York, becomes manager of the newly opened Pittsburgh office of his division.

Pete Fuger, of the sales staff, moves to St. Louis as manager.

◆

WARD S. YUNKER IS NOW CONNECTED WITH FOXBORO

It has been announced that Ward S. Yunker has joined the Foxboro Company, Foxboro, Massachusetts, as assistant manager of the Fiber Industries Sales Division, specializing in instrument engineering for the pulp and paper industry.

Mr. Yunker is well fitted for this type of work. He graduated from Middlebury College with a B.S. degree. He then took a position with the University of Wisconsin and later did post-graduate work at the Institute of Paper Chemistry, Appleton, Wisconsin. Since then, his industrial experience includes connections with the Great Northern Paper Company, the Paper Insulated Wire Division of Western Electric Company, and the Roofing Products Products Division of the Flintkote Company.

◆

▶▶▶ Formerly with the Holyoke Paper Makers' Chemical Division, *Lt. Thomas Sterling* has returned from naval duty and is now associated with Hercules Powder Company as sales engineer, with headquarters in the company's New York office.

T. J. Kennedy

▶▶▶ Pacific Paperboard Company (Longview, Wash.) has named *T. J. Kennedy* as general manager. Mr. Kennedy has been with the company for the past twelve years.

◆

THIRD GIFT TO BREVARD COLLEGE BY HARRY STRAUS

A gift of $10,000 was made recently to Brevard College, Brevard, North Carolina, by Harry H. Straus, president of Ecusta Paper Corporation, Pisgah Forest, North Carolina. This is the third $10,000 contribution made to the college by Mr. Straus during the past four years.

Dr. E. J. Coltrane, president of the college, states that the school is virtually free of debt as a result of these donations, and that an expansion and improvement program has been launched designed to make Brevard College one of the leading junior colleges of the state.

◆

▶▶▶ Promoted to assistant manager, paper division, of Price Bros. & Company, Ltd., Kenogami mill, *Dr. Joseph Edwards* is succeeded at the Riverbend mill by *Frank P. Silver*, as general superintendent. Mr. Silver was formerly mill manager of Bowater's Newfoundland Pulp & Paper Mills, Ltd., at Cornerbrook.

◆

GRANT RICHARDSON RETURNS TO DUTIES AT HAMMERMILL

Grant Richardson has completed his activities as director of the Paper Division of the War Production Board in Washington and has resumed his duties as export manager and district sales manager of the eastern territory for the Hammermill Paper Company.

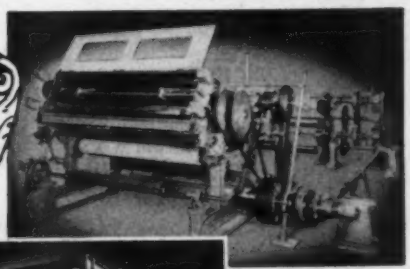
The Paper Division of the WPB was

New Catalog just off the press

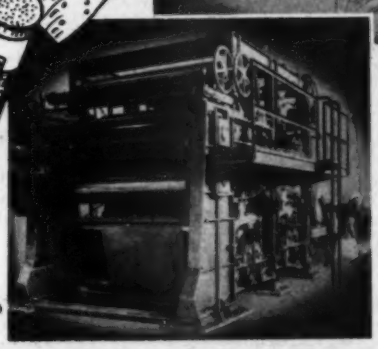
IF your material or package must provide

GREATER RIGIDITY
PROTECTION AGAINST MOISTURE, ACIDS, ETC.
CONSUMER APPEAL

Waldron—2 Web Laminator.



Special 2 Web Laminator for applying Cellophane to paper or board.



Five Web Laminator —fast running wide special unit.

Get The Facts About WALDRON LAMINATORS

These are the machines used by practically all the leading converters for producing the basic materials for an almost unlimited number of popular products. Waldron Laminators are built to handle from two to ten or more webs, combining such materials as paper, board, cloth, Cellophane, Pliofilm, metal foil, varnished paper, felt, sisal, burlap, wire, wadding, etc., at speeds up to 700 feet and more per minute. Designed for any type of adhesive; embodying advanced methods of guiding, controlling and drying, Waldron Laminators are providing the essential properties required, speeding up output and lowering production costs.

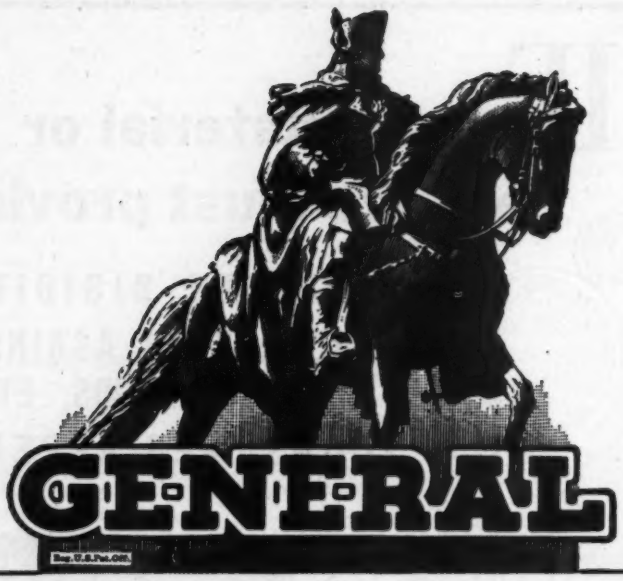
• • • • • •

Send us the details of your laminating problem or requirements. Profit from Waldron's long engineering experiences in this field. Copy of our new descriptive Catalog No. 118 is available on request.

Printing Machines
Combining Machines
Creping Machines
Floor Covering Machines
Gumming Machines
Rubber Mill Machines
Wall Paper Printing
Waxing Machines
Winders and Slitters
Special Design Machines

JOHN WALDRON CORPORATION
Main Office & Works — NEW BRUNSWICK, N. J.

WALDRON
Paper Converting Machinery



RODA

High grade gas, by-product and steam coal from Wise County, Va., on the Interstate Railroad.

DENDROID

High grade gas, by-product, steam and domestic coal from Wise County, Va., on the Interstate Railroad.

STONEGA

High grade, high volatile steam and by-product coal from Wise County, Va., on the Interstate Railroad.

PREMIX

A laboratory controlled product blended to meet exacting stoker requirements. From Wise County, Va., on the Interstate Railroad.

COKE

Roda and Stonega from Wise County, Va., and Connellsville Coke from Pennsylvania.

CRITERION COAL

High grade gas, by-product, steam and domestic coal—Pittsburgh seam from Irwin Basin, Westmoreland County, Pennsylvania, on the Penna. Railroad.

CROZER

Genuine Third Vein Pocahontas from McDowell County, W. Va., on the Norfolk & Western Railroad.

Admiralty Coal

Genuine New River Smokeless, Beckley or Sewell seam from Raleigh County, W. Va., C. & O. and Virginian Railroads.

Old Kentucky

Hazard No. 4 and No. 7 steam and domestic coal from Wiscoal, Knott County, Kentucky, on the L. & N. Railroad.

CHARMCO

Unexcelled Steaming Coal from the Fire Creek Seam in Greenbrier County, W.Va., originating on the N.F.&G.R.R.

ANTHRACITE — Hazle Brook Premium . . . Raven Run

General Coal Company

123 SOUTH BROAD STREET, PHILADELPHIA 9, PA.

BRANCHES:

BLUEFIELD, W. VA. BOSTON BUFFALO CHARLOTTE, N. C.
CINCINNATI DETROIT NEW YORK NORFOLK PITTSBURGH

discontinued November 3 following the revocation of virtually all wartime controls affecting the paper industry.

Although he has returned to his home in Erie, Pennsylvania, Mr. Richardson will continue, for the time being, to serve the Government and the paper industry as consultant to the Civilian Production Administration, the newly formed agency which has been set up to deal with reconversion.

Necrology

OMER G. DREHER

A resident of Miamisburg, Ohio, and general superintendent of the American Envelope Company of West Carrollton, Omer G. Dreher passed away October 15 at the age of sixty.

Dr. Dreher had been with the company for more than forty years and

Omer G. Dreher

was one of its directors as well as director of the Miamisburg Paper Company, a branch. He was director and vice president of the West Carrollton bank and was a member of the directorate of the Apex Tool and Machine Company, Dayton. He is survived by his widow.

◆

OLIVER JOSEPH McSWAIN

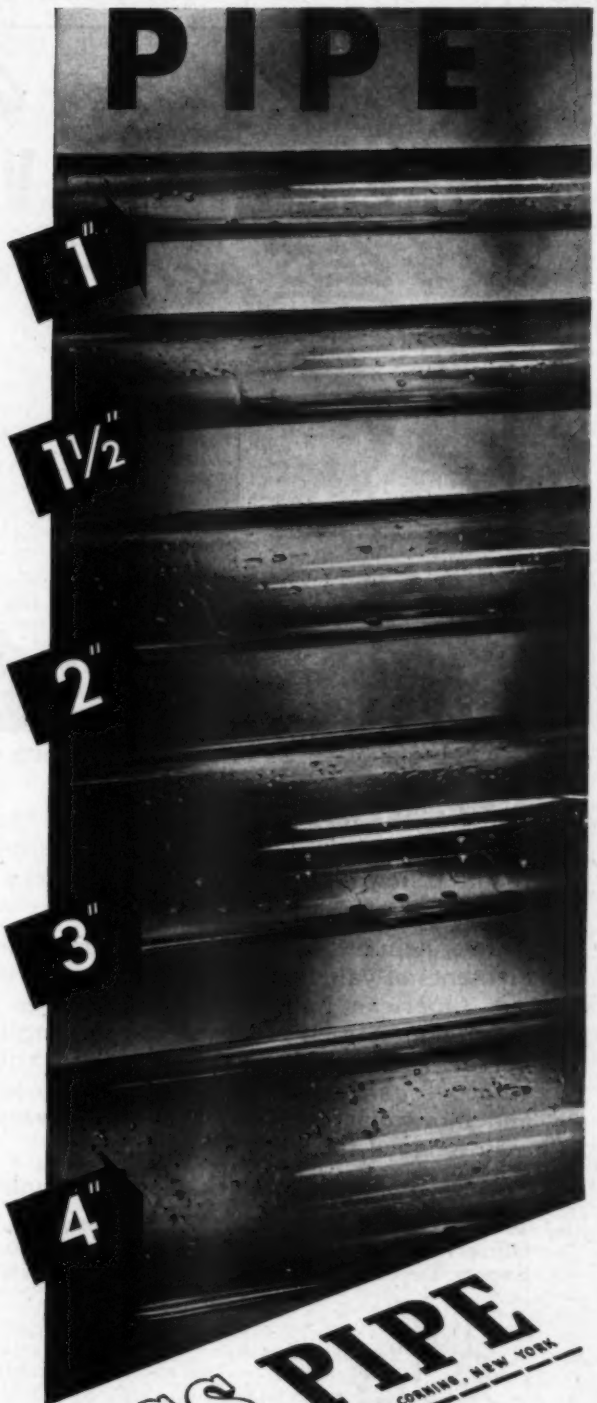
Vice president of the Albermarle Paper Company, Richmond, Virginia, Oliver Joseph McSwain passed on recently at his home there.

Mr. McSwain first became associated with Albemarle company as traffic manager eighteen years ago. He had been an instructor at Virginia Mechanic Institute for many years.

His widow and two daughters survive.

PYREX PIPE

and fittings are supplied in . . .



If your process pipe requirements can be taken care of by 4" diameter pipe or smaller, you can have all of these advantages of PYREX Pipe.

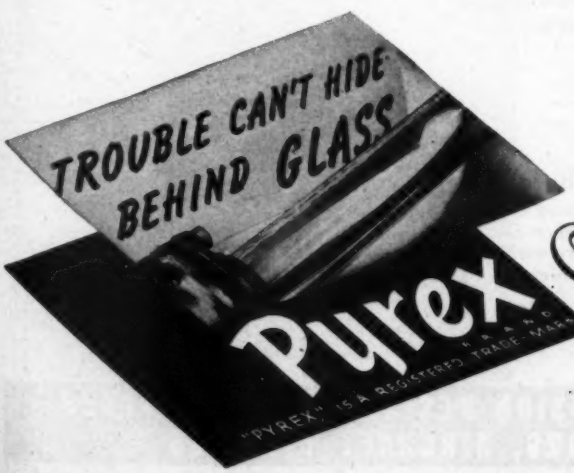
1. *Ruggedness* is proved by literally miles of PYREX Pipe that have been in actual plant service over a period of years.
2. *Transparency* of PYREX Pipe permits you to keep a visual check on your product as it is conveyed through the line.
3. *Corrosion resistance* of this special borosilicate glass gives PYREX Pipe a long life under acid conditions too severe for other materials.

In addition, PYREX Pipe withstands high temperatures and sudden changes in temperature. Also, because of the smooth hard surface, pressure drop in PYREX Pipe is appreciably less than in pipe lines of other materials.

All these features make PYREX Pipe an economical, practical material that can simplify your operating problems.

PYREX Pipe is stocked in all these diameters and in standard lengths of 10 feet. A stock of standard fittings and adaptors is also available. Where standard parts can be used, it will simplify your installation and stock maintenance. But where you prefer other lengths or special fittings, they can be easily furnished exactly to your specifications and with no excessive premium in cost. For full details write Industrial Sales Dept., PI 11.

CORNING GLASS WORKS
CORNING, NEW YORK



GLASS PIPE

AND INDICATES MANUFACTURE BY CORNING GLASS WORKS, CORNING, NEW YORK

INDUSTRIAL SALES DEPT., PI 11
CORNING GLASS WORKS, CORNING, N. Y.

Please send me the following literature:

☐ PYREX Pipe Bulletin
☐ Installation Manual
☐ Adaptor Connections
☐ PYREX Valves

Name ..... Title .....

Firm .....

Address .....

Because of their Better Quality

LUNKENHEIMER VALVES

cost us LESS per Year of Service!

In buying a valve, as in buying anything else, it's *value* you're really after.

What is the measure of valve value? Length of service life, efficiency of performance, time and expense required for maintenance . . . these are the principal factors.

Lunkenheimer Valves have, in these and in all other elements of value, proved their superior worth throughout American industry, in wartime as in peacetime. Maintenance men everywhere rely implicitly on these *better valves* because they know they are *better values—quality-built in every detail, assuring longer* and more efficient service with the very minimum of maintenance trouble and expense.

For Better Valve Values, Specify Lunkenheimer!

THE LUNKENHEIMER CO., Cincinnati 14, Ohio, U. S. A.
Offices: New York 13, Chicago 6, Boston 10, Philadelphia 7.
Export Department: 318-322 Hudson St., New York 13, N. Y.

Your LUNKENHEIMER Distributor

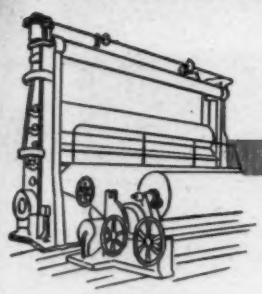
Lunkenheimer Distributors are located in the principal industrial centers. There is one near you fully equipped to assist with your maintenance and operation problems. Call on him.

Fig. 2125
Bronze
Gate

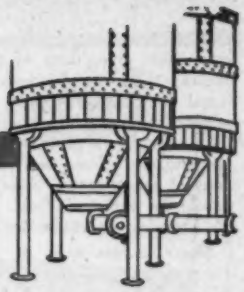
Fig. 16
"Renewo
Globe"

Fig. 1430
Iron
Body Gate

BRONZE, IRON, STEEL, AND CORROSION RESISTANT ALLOY VALVES—AIR DEVICES, LUBRICATORS, AIRCRAFT FITTINGS



Practical SHORTS



Readers are invited to submit short, practical articles for this department. The items should be original and should relate to ways and means of handling production and maintenance jobs. Where possible, articles should be illustrated. Rough sketches only are required. Payment will be made for acceptable items upon publication.

Homemade High Humidity Cabinet

The high humidity cabinet (see illustration) designed to fit inside an electric refrigerator body, is made of ⅜ in. Transite. Put together with one-inch brass moulding and with all joints sealed, the cabinet is divided into two parts—an upper and a lower compartment. The upper compartment is for storage; the lower, for housing a fan, a heating unit, and a humidifying unit.

The dimension of the storage compartment is 29½ in. by 22½ in. by 16¼ in., thus giving a capacity of 6.25 cubic feet. Both the top and the bottom of the storage compartment are perforated. The compartment also is supplied with baffles.

The fan used in the lower compartment, taken from an out-of-service water cooler, is a 7½ in. unit. It is driven through a ¼-hp. motor located outside of the unit. Speed of the motor is reduced with a slide wire rheostat.

The heating unit consists of a 150-watt strip heater attached to a copper plate. There is also a light bulb, either 50 or 100 watt, depending upon the ambient temperature.

In addition, there is a thermoregulator, a rubber glove, a weighing scale, and a dew point tube.

The thermoregulator, a high capacity bimetallic Cenco-De Khotinsky unit, is used in conjunction with a relay. The relay is necessary because of a direct current power source of 235 volts.

The rubber glove is seated in a four inch hole in the inner door of the cabinet. It enables the operator to reach into the cabinet and place test specimens on the balance pan of either a triple beam balance (accurate to .05 gram), or a quantitative balance.

The balance, located on the outside top of the refrigerator shell, is connected to the pan within the cabinet through a shaft which, in turn, extends through a small heater. This heater is made from half a tin can and a 75-watt heating unit. Setting on top of the cabinet or on the balance base, its purpose is to warm the shaft sufficiently to prevent condensation on the shaft at the point where it enters the cabinet.

The dew point tube, likewise homemade, is used for measuring the relative humidity. A wet and dry bulb thermometer also is used to measure humidity, but the dew point tube, being independent of air velocity, is more accurate.

The humidifying unit consists of a pan which contains water or a saturated salt solution.

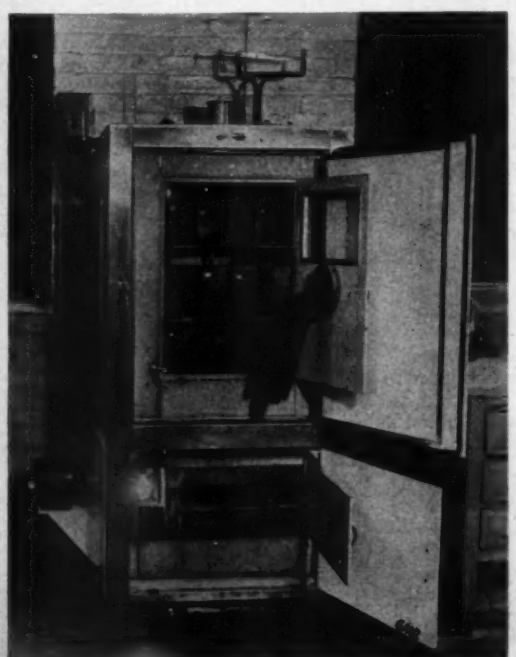
In operation, the fan circulates air drawn from the top compartment over the water or saturated salt solution. The air then passes across the heater and up into the storage section through its perforated base and there it is distributed uniformly by the baffles. Continuing its travel, the air rises through the cabinet and passes out through the perforated top to be drawn down an air duct along side of the cabinet to the bottom compartment by the fan, thus completing the cycle.

A light bulb on the suction side of the fan serves to minimize any drop in temperature in the air cycle. This bulb is on continually.

The heater is located on the other side of the pan, and as indicated previously, the air must pass over it before entering the cabinet.

With this cabinet, the temperature which normally is maintained at 100 Fahr., may be run anywhere from room temperature to 175 Fahr.; and the relative humidity may be varied from nine to 98 per cent, depending upon the choice of chemical used to create the constant humidity atmosphere. The circulation of air should be slow and uniform throughout the entire storage space.—J. D. MALCOLMSON.

◆



This cabinet was developed by Wm. H. Caddoo, Division Chemist, Robert Gair Company, Piermont, New York

Precautions in Cleaning Machinery

Plants using organic solvents for cleaning machinery should take special safety precautions against fire and illness.

Solvent vapors can be injurious to health. Good ventilation is therefore essential wherever organic solvents are employed. Best procedure is to use properly designed degreasing equipment or a mechanically ventilated spray booth. If a plant which has no such equipment must do a considerable amount of machinery cleaning, it may be advisable to install a special ventilator for handling the solvent vapors. This ventilator may consist of a motor-driven blower which draws the contaminated air from the breathing level and also from the floor level, where the heavy vapor tends to collect. Small parts may be cleaned under a ventilated hood. Such apparatus is not very expensive, and may be used safely when designed and installed under the supervision of a degreasing expert.

If the amount of cleaning is not very great, individual protection for the workers may be provided by means of gas masks. These masks should be of types approved by the Bureau of Mines for the specific conditions involved. Where the operator is provided with a mask, however, care should be taken that nearby workers are not exposed to solvent vapors, through lack of general ventilation. It may be desirable to carry out cleaning operations after regular working hours, so that only the protected operators are present.

In some cases natural ventilation, outdoors, or in a well-aired room, may be sufficient for small, occasional, cleaning operations. This procedure may not always be safe, however, since weather conditions are variable.

Workers on or near cleaning operations should be instructed to report promptly to the foreman any strong sol-

vent odor. Symptoms of illness, such as nausea, dizziness, headache, stomach or visual disturbances, should immediately be reported to the plant physician or nurse, who must be kept informed of the solvents in use. Some individuals may show unusual sensitivity to solvent vapors, and should be removed from the vicinity of the cleaning operation at once.

Skin troubles may be caused by frequent or prolonged contact with solvents. Where it is not possible to avoid skin contact with solvents, skin difficulties may be prevented by providing workers with protective clothing or creams and good washing facilities.

The chlorinated solvents, such as trichlorethylene, carbon tetrachloride, and perchlorethylene, are not fire hazards, and may be used safely as long as proper ventilation is provided. The petroleum solvents, such as gasoline, benzine, and petroleum ether, on the other hand, are highly flammable, and require extra precautions. Specially designed ventilating equipment, non-sparking tools and shoes, and vapor-proof lights must be provided. Strict observance of "No Smoking" rules and suitable fire extinguishers, conveniently located, are important.

Certain solvent vapors may be corrosive, so that it is not advisable to keep fine machinery in the vicinity of cleaning operations unless there is an efficient ventilating system drawing off the vapors. Otherwise, the machinery should be covered, or the clean-up operation moved elsewhere.

—Safety Research Institute

◆

Boiler Tube Cleaner

The accompanying illustrations reveal construction details of a simple device for the cleaning of boiler tubes. The device consists of a shovel handle, several short sections of pipe with suitable fittings, an air valve, and a metal disc.

The shovel handle is attached to one end of the piping layout as indicated in Figure 1 while the metal disc is attached to the other.

The disc (Figure 2) is adapted to collar with set screw onto pipe through collar. The collar is turned down so that it will fit in disc and is welded. Inside diameter of collar is free to move on pipe.

Compressed air is introduced in pipe (Figure 1) from metal hose at left of worker and air valve is controlled by chain in worker's hand. After soot is dislodged, air is released to blow it out.—Compressed Air Institute.

◆

Conditioning a Marked Supercalender Roll

Should a supercalender roll become marked, wet it down with hot water and keep it wet until the mark is rolled out. The stack, in the meantime, should be operated at high speed and with plenty of pressure. A roll that continues to mark should not be run because of the tendency of the mark to set; rather, the roll should be wet down immediately and the effort made to run it out.

If pushed for time in conditioning a marked roll, a light sand job (using about a half dozen No. 50 Garnet or Carborundum sheets) should do a fair job. After sanding, the roll should be conditioned for about two hours, using hot water and bringing the pressure up gradually every half hour to a little above the pressure in use before getting marked. Usually a sand job will have to be done if there has been a long run of different widths. The sand job will take about one hour and the conditioning about six, it being necessary to take off the top crust and to keep the roll level all the way across.—William R. Stapley, The Paper Industry and Paper World, 23, No. 8, (November, 1941.)

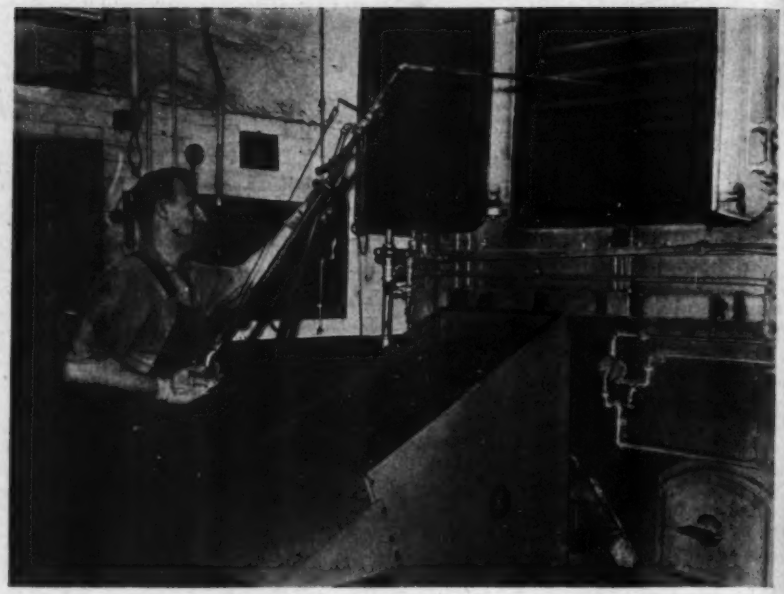
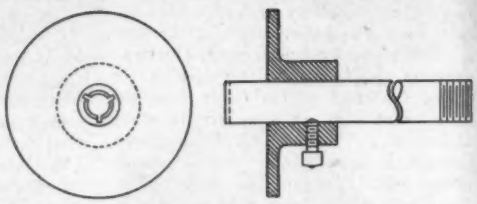


Figure 1 (above)

Figure 2 (right)



◆

How to Remove Sodium Silicate From Eye

If a plant operator has the unfortunate experience of splashing sodium silicate in his eye, the effect is usually painful but not permanently serious. The irritation, however, may last for several days unless prompt treatment is given.

First aid involves the use of liberal quantities of water to wash out the silicate. The ideal arrangement would be to hold the face so that the eye is immersed in a gently flowing stream of lukewarm water. A bubbler such as a drinking fountain is good if the water is not too cold. Otherwise, use of an eye cup is suggested; or an assistant can flush the eye with water from a medicine dropper or syringe. It takes a great deal more water than one might suspect to thoroughly wash away all traces of silicate. Five minutes in the flowing stream, for instance, would not be too long.

When it is certain that the silicate has been entirely washed out, the eye should be bathed with a little boric acid solution. Some suggest this bathing should be followed with a drop of castor oil or other soothing eye ointment. It may be well in servere circumstances to consult a doctor. Prompt use of the water treatment, however, should first be made as delay permits attack on the sensitive tissues. Under no circumstances should a neutralizing solution be used with silicate as that would precipitate a sticky gel that would be very difficult to wash out.

The best plan, of course, is to prevent getting silicate into the eye by wearing goggles in any operations where silicate is likely to be splashed.—F. M. Suarez.

◆

When to Add Acid to Storage Battery

Acid should only be added to a battery to replace that lost, possibly caused by overfilling, frequent hydrometer readings, or leaking container. Acid should never be added to the battery to increase its fully charged specific gravity if it can be restored to normal by charging the battery. In other words, acid should only be added to a battery to replace that lost and not to replace that which is in the plate because of a discharged condition.—*Philco Storage Batteries*, Philco Corporation.

STEIN-HALL *offers counsel...*

What are your peacetime problems? Do you need counsel on the best starch method for your starch kitchen . . . on what type starch to use at a particular time or for a particular purpose? Are you studying material and equipment problems? Whatever your problem, Stein-Hall paper men can help you find the answer.

Our paper technical field men know their stuff. They are plant-wise, thoroughly familiar with materials, equipment and production methods. They can tell you the type of starch best suited to your needs, and how to plan an economical, efficient, flexible set-up for maximum results.

Our superior starches, gums and dextrines for sizing, calendering, coating and adhesive uses can be major factors in solving your problems. Call on us for counsel which will help you to secure your share of peacetime business.

79 YEARS OF STARCH SERVICE

STEIN SH HALL

285 MADISON AVENUE • NEW YORK 17, N. Y.
2841 SOUTH ASHLAND AVENUE • CHICAGO 8, ILL.
250 VAN HORNE STREET • TORONTO, CANADA

EL PASO • FORT ES • ALBANY • NEW YORK
CHICAGO • CHARLOTTE • PROVIDENCE
LONG BEACH • KANSAS CITY, KAN.

FOUNDERS—STEIN • HALL RESEARCH FELLOWSHIP AT THE INSTITUTE OF PAPER CHEMISTRY, APPLETON, WIS.

The Forest Products Laboratory Reviews Its Wartime Accomplishments and Previews Its Future

▶▶▶ RESEARCH ACHIEVEMENTS in forest products that helped the nation to victory in World War II were revealed on October 11 at the U. S. Forest Products Laboratory, Madison, Wisconsin. On that day the Laboratory opened its doors to some 40 representatives of American newspapers, trade and professional journals. Since before the sneak Jap attack on Pearl Harbor, December 7, 1941, the Laboratory engaged on extensive war research for the Army, Navy, and other agencies, had been closed to all but those engaged in high-priority wartime business.

The Forest Products Laboratory is the only Federal Government laboratory devoted to research in forest products. It functions under the Forest Service of the U. S. Department of Agriculture. It was founded at Madison, Wisconsin, in 1910, the first such laboratory in the world, and has been continuously operated in Madison ever since, in co-operation with the University of Wisconsin. Its buildings are on land donated by the University.

The organization is headed by the director, Carlile P. Winslow, and two assistant directors, George H. Hunt (acting director in the absence of Mr. Winslow in Europe) and L. J. Markwardt.

Its technical work is divided among nine divisions, as follows: Derived Products, Industrial Investigations, Materiel Containers, Pulp and Paper, Silvicultural Relations, Timber Mechanics, Timber Physics, Technical Service Training, and Wood Preservation. Four service divisions include Engineering and Plant Management, Fiscal Control, Information and Education, and Personnel Management.

In addition to these divisions, the Bureau of Plant Industry, Soils, and Agricultural Engineering of the Department of Agriculture maintains a Division of Forest Pathology here, which collaborates with the Laboratory in studies of decay and stain fungi and their control.

What the visiting editors saw at the Laboratory was in effect a telescopic view of what the forest products industries generally contributed to the nation at war. There was hardly a business drawing on wood for its raw material that was not, in one way or another, affected by the research and development that went on at the Laboratory simultaneously with the battles fought by the armed services and the struggles to boost and maintain production in which industry was constantly engrossed. Many of these companies participated actively in the work.

To do its job, the Laboratory underwent a major wartime transformation. Its staff jumped from a peacetime depression low of less than 200 veteran research workers to about 700 at the peak of its war activities. Its whole program of research was switched from peacetime projects to the problems of a nation engulfed in technological war. That meant not only the abandonment of many peacetime research jobs of only incidental importance to war needs but a shift in emphasis from so-called "fundamental" research to concentration upon vital immediate needs of the armed services and war plants of the country.

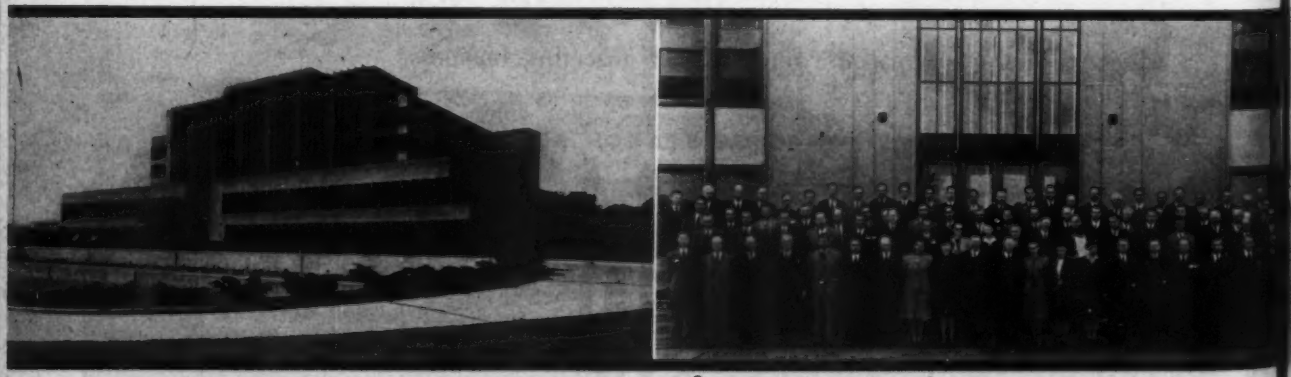
One of the most dramatic phases of this transformation was the creation almost overnight of a packaging staff that undertook the solution of a multitude of packing and transportation problems for the Army Ordnance Department, the Army Air Forces, War Food Administration, and other agencies. That staff, recruited for the most part from men from industry with commercial packaging experience who could be quickly trained in the Laboratory's basic packaging principles and methods, was functioning efficiently by early 1942.

A year later, its improvements in packaging of war supplies from tanks, airplanes and heavy guns to delicate equipment such as radio tubes and hygrometers had slashed damage losses in shipment from 50 per cent to 3 per cent, saved enough cargo space by more compact packaging to transport in four ships what had previously required five, and saved a billion board feet of lumber by more skillfully designed boxes and crates.

A field staff that never numbered more than 35 men carried the Laboratory's findings and techniques into the Ordnance Department's arsenals, field depots, and contract facilities, including rail freight yards and ports of embarkation. With their guidance, packaging procedures were changed to conform with specifications, manuals, and directives prepared at the Laboratory. Types of containers were improved and standardized so that gradually efficiency, order, and smooth operation replaced the welter of confusion that characterized early efforts to swing into full stride for war. In all, nine manuals, 37 specifications, 1,560 processing and packaging instructions, and numerous guides and directives on packaging were prepared entirely or in large part at the Laboratory.

The Laboratory also acted for Army Ordnance as its official testing agency to determine the suitability of various packaging products such as greaseproof and waterproof wrappings, moisture-vapor barriers, adhesives, tapes, and various kinds of bags submitted by manufacturers for use in overseas shipment of war materials. To do this job, the Laboratory in co-operation with the industry, first had to develop the right tests. These tests then became the basis for specifications covering the various materials. Eventually, the specifications were adopted as joint Army-Navy specifications by which all government agencies procured supplies, thereby eliminating much confusion and raising the quality of acceptable products materially.

The wartime demand for delivery of millions of rounds of 105 mm. ammunition to world battlefronts resulted in an immediate need for containers with superior properties. Because of the critical shortage of metals, a fiberboard case was developed and produced in very large quantities for this purpose throughout the war. Early containers did not afford adequate protection and ammunition was often dented or otherwise damaged even in domestic handling due to deficiencies

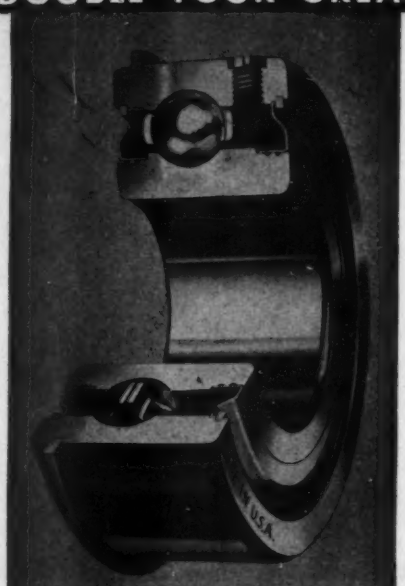


LEFT—The Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, at Madison, Wisconsin. The Laboratory, established in 1910, has occupied this building since 1932. . . .RIGHT—Press Conference at the Laboratory on October 11

DOUBLE YOUR GREASE CAPACITY—SIMPLIFY DESIGN—with

"Cartridge" Ball Bearings

(Patented)



"CARTRIDGE" Ball Bearings have been adopted by hundreds of firms in many lines of industry.

SOME OF THEIR ADVANTAGES:

Can be packed with at least 100% more grease than any self-sealed bearing — especially adapted, therefore, for continuous service for long periods.

Provide positive protection against foreign matter and absolute retention of lubricant—by the use of flanged metal shields, recessed inner ring construction, and two or more grease grooves—the combination affording a truly effective labyrinth.

Are equally efficient in retaining grease in horizontal or vertical position.

Metal shields, though rigidly locked by snap rings, are removable to facilitate inspection, cleaning or re-greasing of bearings.

Can be quickly regreased, either through "built-in" refilling plug opening or by removing metal shields.

Require no lock nuts on shaft or clamping means in housing, because of wide contact areas due to double-row width of both rings —which also prevent "cocking", slippage or "peening".

Reduce costs by simplifying design, eliminating protective closure parts, and saving attendant labor.

Available with shoulder ring, thus permitting a through bore in housing, the shoulder ring providing endwise location.

NORMA-HOFFMANN BEARINGS CORP'N., STAMFORD, CONN. U.S.A.

in the shell containers. The Forest Products Laboratory co-operated with the Army Ordnance Department in an investigation of the materials and methods used in the production of shell cases and in the evaluation of improvements as they were developed commercially. Studies were made of the suitability of fiber furnishes for the paper, the effectiveness of the containers as barrier to water and moisture vapor, the types of construction of spirally wound tubes and other process stops. Mechanical tests of tubes were made to determine compressive strength, rigidity, and resistance to denting.

As a result of this experimental work, a four-fold improvement in strength along with considerable improvement in water resistance and resistance to damage due to rough handling was obtained. Satisfactory tubes were developed, and the Forest Products Laboratory assisted and advised the Ordnance Department in translating test results to commercial production and in the preparation of detailed specifications according to which all tubes could be checked to insure compliance with dimensional and other tolerances.

Another project undertaken during the war had as an objective the development of wet-strengthened paperboard for the manufacture of fiber containers that would give better performance under wet conditions in shipping and storage. This was accomplished by use of an asphalt size to give water repellency and small amounts of synthetic resins to provide retention of strength even after prolonged soaking in water. This treatment also improved the strength of the board in the dry condition and thus made it possible to use greater percentages of lower-grade fiber such as wastepaper in meeting performance requirements. Rough handling tests of containers made in mill trials showed that the containers of the kind used for canned goods which were made from wet-strengthened board containing no new pulp were as good when dry and better when wet than ordinary nonwet-strengthened containers in which 65 per cent new kraft pulp was used. Wet strengthened board was also used in mill-scale manufacture of cylindrical fiber cheese boxes. The special containers were markedly superior to the commercial product. A large manufacturer of the fiberboard cheese drum has just recently started using this special board in the production of cheese drums.

An outstanding example of the diversification of species for pulp during the war has been the increased use of broadleaf hardwoods as a substitute for the principal coniferous species. The use of hardwoods for pulp was nearly doubled during the past year.

Increased use of hardwoods and other low-grade species for pulp is likely to be even more important after the war. To meet growing demands for pulp and paper, we are faced with some scarcity of the most desirable long-fibered coniferous woods. This is partciularly true in the Lake States and the Northeast, which depend to a considerable extent on Canada for supplies of pulpwood. On the other hand, we have readily available large quantities of hardwoods and other species in these regions for which some use should be found in order to gain the greatest value from our forest lands and maintain their productivity. The utilization of hardwoods is, therefore, one of our important current projects.

One of the most promising methods for converting hardwoods to pulp is the semichemical process developed at the Laboratory several years ago. This process combines a mild chemical treatment to give softened chips which are then refined mechanically into a strong pulp high in yield. Recent improvements in bleaching procedures for these pulps have produced pulps from the short-fibered hardwoods that are nearly twice as strong as those produced from the same species by conventional pulping methods.

Recently Laboratory trials indicated on an experimental scale that semichemical pulps might be substituted for long-fibered sulphite pulp in the manufacture of machine-coated groundwood book paper. Following the Laboratory trials, an experimental mill production run was conducted in co-operation with the manufacture of paper for *Life* magazine. The *Life* paper is a machine-coated sheet formerly made from spruce and hemlock groundwood and sulphite pulps. This trial produced satisfactory papers containing as much as 85 to 90 per cent hardwood

GRUENDLER CRAFTSMANSHIP
Serving Industry over 50 Years

For a Better Refined PULP

GRUENDLER "TURBO" REFINER

Saves on power up to 25%

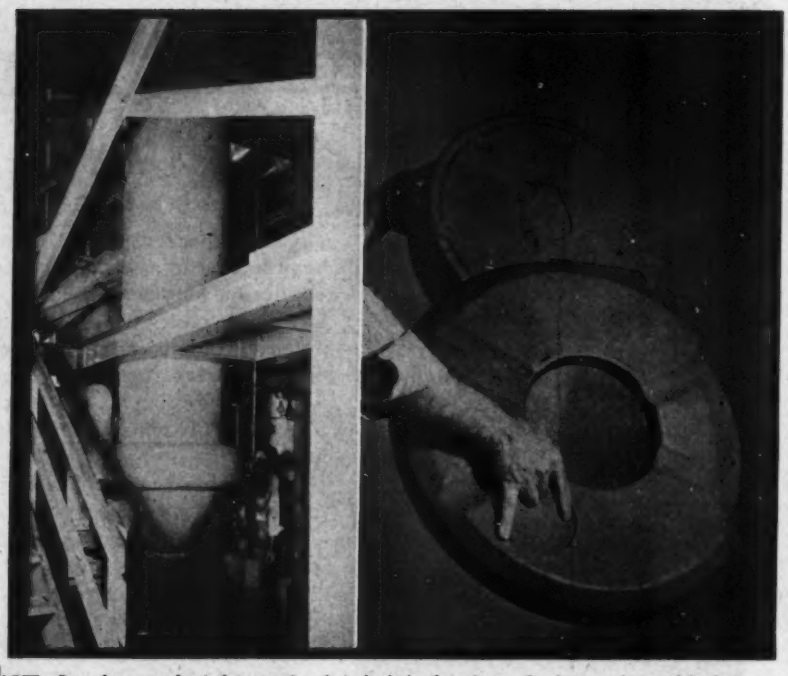
Let us send you our Laboratory Reports and Bulletin

Actually Separates, Hydrates, and Combs Fibres—No disintegration and shortening of Fibres with this new method. *Builders of* WOOD-HOGS, STRAW and WASTE PAPER SHREDDERS

GRUENDLER

CRUSHER and PULVERIZER CO.

2915-17 North Market St. ST. LOUIS (6), MO.



LEFT—Percolator in the Laboratory's ethyl alcohol pilot plant. Studies on the acid hydrolysis of sawdust and other wood waste with this and similar equipment led to the authorization by WPB of a 4,000,000 gallon per year ethyl alcohol plant being erected by the Williamette Valley Wood Chemical Company, Springfield, Oregon. RIGHT—Bomber plane gun shield (top) and gun turret floor made from papreg, the high-tensile strength paper laminate developed at the Forest Products Laboratory

pulps (semichemical and groundwood aspen). These papers were used in two recent issues of *Life* with favorable reports from the printers. In other Laboratory book paper trials the hardwood semichemical pulps have been substituted successfully for spruce sulphite pulp in mixtures with hardwood soda pulp.

Other types of papers which have been successfully made from hardwood semichemical pulp are glassine and creped tissues. A glassine sheet containing 80 per cent aspen semichemical pulp was considered to be equal in quality to that made from high-quality spruce sulphite pulp. Creped tissues containing up to 90 per cent hardwoods have been made experimentally from mixtures of semichemical and groundwood pulps, the quality of the tissues being considered equal to that of similar-type papers made entirely from spruce. Although there is still much to be done in determining the commercial feasibility of using hardwood pulps of this type for many grades of paper, the results obtained thus far indicate that hardwoods may in the future constitute an important source of pulpwood.

One of the Forest Products Laboratory's most promising wartime developments in the general field of plastic materials is a paper-base laminate termed "papreg." This material is a dense, infusible product having more than twice the tensile strength and with improvement in most mechanical properties over the strongest conventional paper-base laminate previously available.

Its superior strength and rigidity distinguishes papreg from older paper laminates whose good corrosion resistance and low thermal conductivity it retains. The prewar laminates were limited in usefulness by their lack of strength suitable for structural parts. The wartime search for sheet materials of adequate strength to replace light metals led to the development of papreg by the Laboratory.

Papreg is about one-half as heavy as aluminum per unit of volume and can develop a tensile strength of 35,000 to 50,000 pounds per square inch, which is comparable to that of certain aluminum alloys on a relative weight basis. Tubular sections can be readily produced and slight taper or gage variations are easily obtainable. Molding can be achieved at pressures as low as one-tenth the amount required for pressing of some conventional plastics, a feature which is of considerable importance in the production of sheets of large area. Panels in sizes up to 8 by 16 feet have been successfully made.

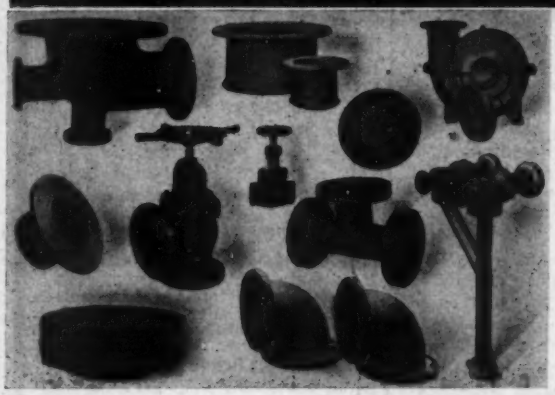
Papreg owes its high strength properties to the kind of paper from which it is produced. It can be made from a special thin and dense paper which is produced from high-strength softwood pulp.

Papreg was used extensively in the manufacture of turret assemblies for the B-24 bomber, ammunition boxes for fighter aircraft, airplane flooring material, and rocket firing tubes for airplanes among other purposes for which its combination of light weight and tensile strength, comparable to that of aluminum on a weight basis, was adapted. One firm did an $8,000,000 business manufacturing papreg for war uses. More than a dozen com-

Fight Corrosion! with MISCO Stainless Steel Alloys

MISCO stainless steel alloys are successfully and widely used throughout the Pulp and Paper Industry . . .

Corrosion Resisting • Wear Resisting • Heat Resisting



TWENTY YEARS AGO Misco introduced stainless steel castings to the Pulp and Paper Industry. Since that time we have supplied millions of pounds of digester and related castings, centrifugally cast pipe and tubes, fittings and miscellaneous fabricated parts. To pulp and paper manufacturers Misco offers a wealth of experience gained through these years. You are invited to make use of our experience by freely consulting us for your present and future requirements.

Specify MISCO Stainless Steel Alloys

Cast • Rolled • Fabricated

FOR DIGESTER HEADS • DIGESTER BOTTOM SLEEVES • DIGESTER NECK RINGS • ACID VALVES • ACID PUMPS • BLOW-OFF VALVES • BOTTOM CROSSES • STRAINERS • FITTINGS • PIPING • CENTRIFUGAL CASTINGS • MISCELLANEOUS CASTINGS AND ROLLED BARS • SHEETS, PLATES, TUBES AND WELDING ROD

ALLOY CASTING DIVISION
Michigan Steel Casting Company

MISCO Heat and Corrosion Resistant Alloys

One of the World's Pioneer Producers of Chromium-Nickel Alloy Castings

1999 GUOIN STREET • DETROIT 7, MICHIGAN

panies produced either the paper, the finished papreg, or papreg products for war purposes.

Packages containing supplies must frequently be delievered to beleaguered troops, or to persons lost in remote areas. Such packages when dropped by parachute tend to be dragged after landing even in moderate winds, and in wooded areas they may catch in the tops of trees. The parachute is highly visible to an enemy and the cost of the parachute per pound of material delivered is high.

To fulfill the request of the Army Air Forces for a collapsible, re-usable container which could be dropped from the air without a parachute, the Laboratory designed a fiberboard box with fiberboard airfoil wings. The wings rotate the box about its vertical axis in descent, retarding the rate of descent and limiting the impact at landing. Mechanical reduction of the rate of rotation of the box, necessary to maintain the box in the upright position required for operation of the wings, was accomplished by the use of an auxiliary fiberboard piece mounted on top of one of the wings. This piece billows with air as the rate of rotation increases, providing drag which counteracts the increase in rotation.

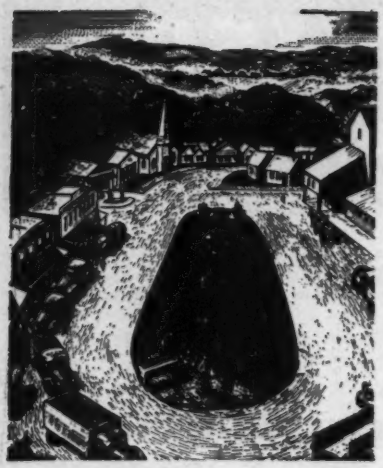
The container, carrying net loads up to 75 pounds, performs satisfactorily when dropped from airplanes. The cost is only a fraction of that of a box equipped with a parachute. Although it was developed for the Army Air Forces, some of the other services have also become interested. Possible peacetime uses include the dropping of supplies to isolated crews fighting forest fires, the dropping of mail or express shipments, and the delivery of supplies to remote communities.

Considerable current interest has been shown in the use of resin-treated paper for overlays for veneer and plywood. These papers when molded to the surface of wood show promise for the purpose of improving the abrasion, water, and moisture-vapor resistance of the products to which they are applied, improving the strength properties, altering the appearance of wood by enhancing or hiding the grain, improving paintability and resistance to face checking, upgrading low-grade veneers, and other purposes. The Forest Products Laboratory has developed paper capable of meeting most of the requirements and has contributed to the commercial production of the papers of this type now available. An appreciable volume of resin-treated paper was marketed during the war for producing overlays on Douglas-fir plywood for such uses as army buildings, vapor-tight boxes for valuable instruments, trunks, medical supply kits, table tops for work on parachutes, etc. The Laboratory aided in developing techniques of application of the resin-treated paper to wood surfaces. Currently it is attempting to determine important characteristics and establish methods of evaluation of the paper plastic and wood composite materials.

In the broad field of improving the characteristics and increasing the availability of flat sheet products for building purposes, the application of paper overlays to wood is considered to be very promising. To accomplish these objectives, however, there is a need for a better and cheaper product than any now known to be available. Current developments indicate that extension of wood supply by greater utilization of low-grade veneers can best be achieved by the use of thick and inexpensive papers which are capable of masking defects in wood and restraining face checking.

One of the materials considered for use as a core for sandwich construction is pulpboard treated with a resin and cured to impart strength and water resistance. Another and more promising type of core is produced from a honeycomb cellular type of structure made from paper and impregnated with resin. Core materials of this type, when faced with papreg, plywood, aluminmum, or other materials, are expected to play an important part in the production of such items as monocoque aircraft structures, soundproof partitioning for boats, aircraft, and railroad passenger cars, doors, pre-fabricated house panels, and other uses where light weight and maximum rigidity are necessary or desirable.

One contribution by the Forest Products Laboratory to the utilization of lignin has been in the development of new and useful plastics in which lignin is combined with pulp or paper and molded under heat and pressure to form a dense and strong plastic.



"Centerville" Is Putting In a

LAYNE WATER SYSTEM

"Centervilles" throughout the nation are rapidly graduating from town-pump villages. Their growth and stability as cities of lovely homes, fine business houses and progressive citizens has called for the installation of a modern water system. Officials of "Centerville" are beginning right—taking no chances on water supply failure—expensive operation, or short life of wells and pumps. They are putting in a Layne Well Water System. Investigation has shown "Centerville's" officials that a Layne Well Water System is easily within their means and is a sound and profitable investment.

These same kind of Layne Well Water Systems and Layne Vertical Turbine Pumps are serving the nation's largest cities—the greatest industries, biggest railroads, and the most extensive irrigation projects. Layne water producing equipment enjoys the reputation of being the world's best—and that reputation is constantly growing stronger and stronger.

Layne offers fine and always dependable Well Water System counsel with no obligation. For further facts, catalogs, etc., address Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

HIGHEST EFFICIENCY

Layne Vertical Turbine Pumps are now available in sizes to produce from 40 to 16,000 gallons of water per minute. Their high efficiency saves hundreds of dollars on power cost per year.

AFFILIATED COMPANIES: Layne-Arkansas Co., Stuttgart, Ark. * Layne-Atlantic Co., Norfolk, Va. * Layne-Central Co., Memphis, Tenn. * Layne-Northern Co., Mishawaka, Ind. * Layne-Louisiana Co., Lake Charles, La. * Louisiana Well Co., Monroe, La. * Layne-New York Co., New York City * Layne-Northwest Co., Milwaukee, Wis. * Layne-Ohio Co., Columbus, Ohio * Layne-Texas Co., Houston, Texas * Layne-Western Co., Kansas City, Mo. * Layne-Western Co. of Minnesota, Minneapolis, Minn. * International Water Supply Ltd., London, Ontario, Canada * Layne-Hispano Americana, S. A., Mexico, D. F.

LAYNE

WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

The Forest Products Laboratory, through independent research and co-operative work with industrial concerns, has aided in the commercial development of certain lignin plastics now being produced in appreciable volume. Much of the process detail followed commercially in the manufacture of these products was the result of this laboratory work. It is expected that lignin plastics will be of increasing importance due to their many favorable characteristics and the fact that the lignin which they contain is potentially both abundant and inexpensive. Applications in which lignin plastics are expected to find use include electrical parts, table tops, decorative panels, and housing. For many applications the lignin plastic is equal to or better than other more costly plastics which are produced from synthetic resins.

More recently pulp boards have been made by the Forest Products Laboratory from the hydrolyzed chip fiber and pressed in the wet condition without the addition of phenolic resin to give a panel with quite good properties comparable to those of untempered commercial fiberboards which find considerable use in housing and for other purposes.

Insufficient background is available as yet to predict to what extent these new improved woods and plastics will be used commercially in our peacetime reconstruction program. The products, undoubtedly, have properties that are desirable for many uses. The big, unanswered question in connection with most of the uses is, "Do the improved properties of the material in question increase the serviceability of products made therefrom sufficiently to warrant the cost?"

An integral part of the Laboratory's work was the dissemination of its information to the war industries of the nation. This was done in several ways. The Laboratory participated in the preparation of specifications for the use of Government agencies in buying lumber, plywood, glues, and other materials to assure that materials of the necessary quality would be obtained. Numerous manuals, bulletins, and other "how-to-do-it" publications were written for distribution by Government agencies to their suppliers, in order to speed production and improve products. From time to time, Laboratory engineers, chemists, and technologists went into the nation's factories to help out on difficult problems, and during the course of the war more than 10,000 visitors came to the Laboratory for technical advice and counsel.

Nor was this process of "education" all one way. Laboratory staff men were able to gain much of value in their own research work and in helping out other companies by consulting with commercial and Government technologists and observing production processes and techniques as they went from factory to factory. Throughout the war there was close co-operation and free interchange of information between the Laboratory and industry.

To bridge this production gap, the Laboratory early in 1942 instituted a series of short courses in co-operation with various branches of the armed forces. The packaging courses were given for the Army Ordnance Department, the Navy, Army Air Forces, Transportation Corps, Signal Corps, and other branches of the Army Service Forces. Another series of courses was set up for inspectors of aircraft wood and plywood under the sponsorship of the Army Air Forces. These were followed in later months by other courses in the repair of wood aircraft, wood ship inspection, inspection and fabrication of wood parts for military vehicles, and lamination of wood.

In all, from the start of the training program April 13, 1942, through August 18, 1945, a total of 293 sessions of these courses were attended by 15,639 civilian employees and military personnel of the armed forces, their contractors, and a few private organizations doing war work. Of that total, 14,294 were trained in various phases of packaging war material for overseas shipment. Laboratory instructors traveled to all parts of the United States to conduct courses, and in early 1945 six men were sent to Paris, France, to train soldiers in the packaging of guns, ammunition, tanks, and other war equipment and supplies for reshipment to the Orient.

The Forest Products Laboratory has been interested in the problem of producing industrial alcohol from wood waste for over 30 years. It was instrumental in developing a process that supplied several million gallons of alcohol for war work during World War I. The plants

Specializing in The Application of

REBUILT POWER EQUIPMENT

to Paper Mill Needs

Generators • AC & DC Motors • Air Compressors • Motor Generator Sets • Turbo Generator Sets • Transformers • Rentals • Switchboards • Rebuilding • Repairing

Write for complete details of Chicago Electric Service

Chicago Electric Co.

1313 West Cermak Road

Chicago 8, Illinois

that operated at that time were eventually abandoned because of decentralization of the sawmills and because the process was not able to compete economically with alcohol produced from blackstrap molasses sold at "give away" prices from 1922 to 1928. Forest Products Laboratory chemists have, in the meantime, watched the development of processes for the production of alcohol from wood waste in Germany, where necessity rather than economics stimulated such work, and undertook a study of uses for by-products that may help make such processes economically feasible. American engineers have experimented with the German processes and found them uneconomical under American conditions.

However, wartime demands for industrial alcohol made it necessary to produce alcohol from corn and wheat at prices far above the cost of alcohol from wood waste. Accordingly, the Forest Products Laboratory deemed it advisable to investigate the various processes for the production of alcohol from wood to determine the process best suited for American conditions. Late in 1942, the Chemical Referee Board of the Office of Production Research and Development, War Production Board, recommended that the German Scholler process be studied (1) as an insurance against possible future grain shortage and (2) as a method of using wood waste.

To facilitate the work, early experiments, using funds furnished by WPB, were made by Forest Products Laboratory chemists in equipment owned by the Cliffs Dow Chemical Company at Marquette, Michigan. Later some of this equipment was purchased and set up in the Madison laboratory.

The Scholler process consists of the hydrolysis of wood with successive batches of dilute acid over a period of 16 to 24 hours, which produced solutions containing 3 to 4 per cent sugar. The hydrolysis was followed by the conventional procedure of neutralizing the excess acid with lime and fermenting the resulting sugar solutions to ethyl alcohol. Yields of alcohol from softwoods ranged from 45 to 55 gallons per ton of dry, bark-free wood substance.

Within two weeks after the FPL experiments were started, it was found that the long hydrolysis periods called for in the Scholler process were unnecessary and produced excessive decomposition. These experiments led to the development of a new process known as the "Madison wood-sugar process." This process, which requires only one-eighth of the time taken by the Scholler process for the hydrolysis step, shows promise of producing alcohol from wood at prices that may compete with alcohol from any source, provided large quantities of wood waste are available at a low cost. If markets for by-products can be found, the cost of alcohol would, of course, be even lower.

Over 300 pilot-plant runs have been made at the Forest Products Laboratory covering a number of the major woods of the United States. Softwoods produce 25 per cent more alcohol than do hardwoods. Most of the work has been on Douglas fir because wood waste from it is available in large quantities in concentrated areas. The process is a continuous treatment of a charge of wood waste with approximately 0.5 per cent sulphuric acid carried on until the concentration of reducing sugar being removed is less than 1 per cent. The time required for the complete hydrolysis is about 3 hours. About 8 parts of the 0.5 per cent acid solution to one part of dry, bark-free wood are used. Initial pressure for hydrolysis is 50 pounds steam pressure. This is increased as the hydrolysis proceeds to 150 pounds. A study of the reactions involved in the hydrolysis indicates that the time required for a run is a function of the rate of extraction as well as the rate of hydrolysis and for that reason a continuous introduction of acid and continuous removal of sugar provides more favorable conditions for higher concentrations of sugar and higher yields. The average sugar concentration is about 5 per cent.

A system has been developed for flashing the sugar solution coming from the hydrolyzer which permits recovery of methanol and furfural produced in the process as well as avoiding trouble with tar, as was frequently encountered in the German process.

Inovations in the process of neutralization have also been introduced whereby the acid is neutralized under pressure with lime automatically and filtered under pressure, thereby reducing the solubility

UN-WINDING AND RE-WINDING

Change Rolls at Full Speed!

ELIMINATE DOWN TIME . . . *keep your quality constant, reduce tonnage cost, decrease loss and waste!*

The Kohler System

of continuous un-winding and re-winding permits

FULL SPEED CHANGE OF ROLLS

on super calenders, coaters, and small converting operations

THE KOHLER SYSTEM COMPANY

159 East Chicago Avenue

Chicago 11, Illinois

of the calcium sulphate to the point where it will not lime the distilling equipment.

A process of yeast transfer is used in fermentation in which the same yeast is centrifuged from a completed fermentation and added to new sugar solution repeatedly. This process increases the yield of alcohol in two ways: (1) it permits acclimatizing of the yeast so that it ferments sugars from the wood that are otherwise not fermented and (2) it produces more alcohol because less of the sugar is consumed in producing new yeast. Wood-sugar solutions containing 5 per cent sugar are fermented in 12 to 16 hours, producing a beer containing 2.5 per cent alcohol by volume. The yield of alcohol from a ton of dry, bark-free Douglas-fir wood is about 65 gallons of 95 per cent alcohol.

By-products from the process, using Douglas-fir wood waste, consist of 600 to 650 pounds of lignin, 1½ gallons of furfural, 1½ gallons of methanol per ton of wood waste, besides the nonfermentable products in the still bottoms. The lignin may be used as fuel to supply the steam for the process, but it is believed that research will show it to be of more value for other uses. Furfural and methanol have a ready market. The nonfermentable products in the still bottoms may be used to grow high vitamin fodder yeast for chickens, turkeys, hogs, and cows. About 200 pounds of yeast may be grown on the still bottoms from a ton of wood. This procedure also removes sufficient material so that the still bottoms may be discharged into a stream without producing objectionable stream pollution.

The results of the Laboratory's pilot-plant work have been used by the Vulcan Copper and Supply Company, Cincinnati, Ohio, to design a plant for construction at Springfield, Oregon. All operations of the plant will be as automatic and continuous as possible in order to minimize the number of men required to run the plant.

The plant is expected to have a capacity of about 6 million gallons of alcohol, requiring about 125,000 tons of wood waste per year. Manpower requirements are about 12 men per shift, working a 40-hour week. The plant will operate continuously seven days a week.

The estimated cost of this first plant is approximately $2,800,000. It is believed that many improvements will be found when the plant starts operating, permitting simplification and lowered costs for future plants. Determination of actual cost of production must await the operation of the plant. The cost of the acid, lime, electric power, and water have been estimated. If wood waste can be made available at the plant at $2.00 per ton of dry, bark-free wood and if the rental fee used for the Bellingham Alcohol Plant of the Puget Sound Paper Company is applied, the cost of producing alcohol per gallon will be approximately:

Raw materials, wood, chemicals, power, water, etc...	$0.095
Labor	.042
Rental	.16
Manufacturing cost per gal...	$0.297

The cost of alcohol may be reduced by 8.2 cents per gallon if the by-products furfural, methanol, and fusel oil sold at prevailing prices and the yeast sold at the price of soybean meal.

Sales costs, cooperage and other costs must be added to obtain a delivery price.

The cost of producing alcohol from molasses in the years 1928 to 1938 is given at $0.31 to $0.34 per gallon. Contracts for the purchase of alcohol from Cuba in 1945 were set at $0.65 per gallon.

Lignin has been subjected to many chemical treatments that have aided in increasing our knowledge of the material, but up to the present time hydrogenation appears to offer the greatest possibilities for utilization.

Forest Products Laboratory chemists have pioneered in this work, carrying out tests at various temperatures in both high-pressure bombs and in small-scale continuous equipment similar to that used for the production of gasoline from coal.

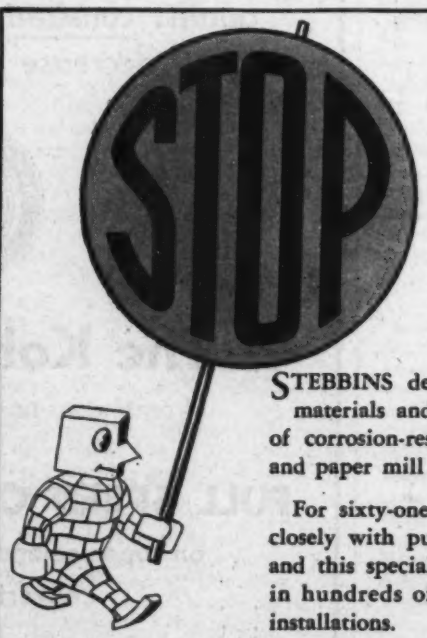
In preliminary work on hydrogenation at the Forest Products Laboratory, a soluble lignin was converted at 250 C. into 27 per cent methanol, 45 per cent cyclic-alcohols and 20 per cent resin. The cyclic alcohol fraction boiling at 210 to 240 C., consisting principally of propyl-cyclohexanol, was tested for antiknock-gasoline blending properties and found superior to the alkylated hydrocarbons now in use. In order to obtain larger amounts of material for test and identification, samples of lignin were treated in a continuous hydrogenation equipment in co-operation with the Bureau of Mines at Pittsburgh. It was necessary to use different solvents and higher temperatures in the continuous equipment, and this resulted in changing the products.

Lignin was suspended in a heavy tar and, after preheating, the mixture was pumped into the reaction chamber where the suspension came in contact with hydrogen. Low boiling products passed out with the hydrogen and were collected as light oil (65 per cent); high boiling products overflowed through a tube in the center of the reaction chamber and were collected as heavy oil (28 per cent).

The light oil separated into two layers, a water layer (28 per cent) and an insoluble oil layer (72 per cent). The water layer was removed and distilled giving methanol equivalent to 7 per cent of the weight of the lignin and other products which have not been identified.

The water insoluble light oil was fractionated by treatment with alkali and found to contain about 30 per cent phenolic material which was separated and distilled, producing phenol, cresols, papa ethyl phenol, catechols, and other phenolic products. The phenolics are of the type that are in high demand for Bakelite-type plastics.

The alkali-insoluble light oil contained terpene-like compounds, terpene alcohols, and unsaturated hydrocarbons. Samples of these neutral light oils were tested for antiknock blending values and found to be similar to the alkylated hydrocarbons being used for aviation gasoline. These



AND CONSULT

STEBBINS

about corrosion-resistant linings and tile tanks

STEBBINS designs, supplies all necessary materials and labor, and installs all types of corrosion-resistant linings used in pulp and paper mill processes.

For sixty-one years, Stebbins has worked closely with pulp and paper mill operators and this specialized experience has resulted in hundreds of long lasting, trouble-free installations.

Inquiries are treated confidentially, and intelligent, efficient and satisfactory service offered on contract basis.

Stebbins Engineering and Manufacturing Company

EASTERN BOULEVARD, WATERTOWN, NEW YORK

neutral oils are very good solvents for oils and resins of the type used in paint, varnish and lacquers.

The heavy oil was used as the heavy tar in which to mix more lignin for hydrogenation and was sent through the process again.

The hydrogen consumption for hydrogenation ranges between 5 and 6 per cent of the weight of the lignin. The equipment must be able to withstand high pressure but may be quite simple and small because the rate of throughput is high.

Equipment is being assembled for further study of continuous hydrogenation. It is hoped that, as a result of these tests, higher yields of phenolics and methanol may be obtained.

Present yields would supply (per ton of lignin) 280 pounds of phenolic substances suitable for plastics and worth between 5 and 10 cents per pound and 140 pounds of methanol worth about 5 cents per pound.

On the basis of experiments conducted by the Bureau of Mines, the cost of converting coal to liquid products has been estimated to be $10 to $15 per ton. Lignin is easier to convert to liquid products so the cost would probably be $8 to $10 per ton.

Any use that may be developed for the neutral oils would provide possibilities for additional income. These neutral oils, 35 per cent of the lignin, may be rehydrogenated to produce a high grade gasoline in case of a shortage of liquid fuels.

The immediate purpose of forest products research is the optimum utilization, for the benefit of the grower, the processor, the distributor, the consumer, and dependent communities, of the forest crop—one of the several major contributions of forest land.

The Government may properly spend large sums of money through the Department of Agriculture for research in the field of forest products utilization because we have in the United States some 600 million acres of forest land to keep in active production. It will either produce wealth or it will not, according to the way it is managed and used but the extent to which it will increase the national wealth depends in large degree on the utilization of the wood crop it produces. Although forest land ownership is divided among several major groups of owners, the profitable utilization of the entire forest crop is important to the whole Nation.

The large volume of timber in public ownership is adequate justification for substantial expenditures of public money to retain profitable markets for the wood crop and to increase the efficiency and effectiveness of its utilization to the fullest extent consistent with sustained-yield production.

The large volume of timber on farm wood lots is an additional important justification for forest products research because the results of properly directed research, when intelligently applied, help the farm wood lot owner make his wood more marketable as well as more adaptable to his own uses.

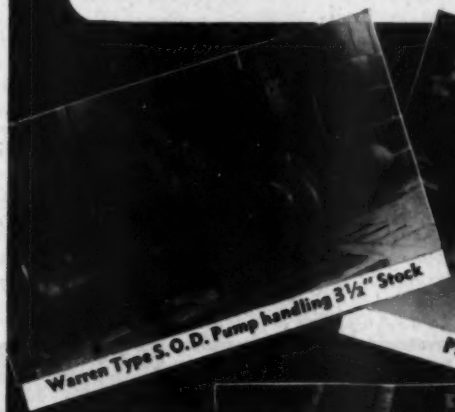
The encouragement of forest growing on private lands is one of the important objectives of the Forest Service and the Department. Forest products research, by developing more and better uses for wood, aids in making commercial and farm forest growing more generally practical, from the profit standpoint. Growing forest crops on farm wood lots and commercial forest land should be self-supporting and research in forest products will help to make it so. The Government should hasten the accomplishment of this objective by carrying on research in addition to that done by industrial research organizations.

Much forest products research is speculative and oftentimes commercial success is not sufficiently assured to encourage the expenditure of private capital even though the findings might be of considerable national benefit. Some research, though successful, brings results that are not subject to private control and thus offers little incentive for private capital to undertake it. Industrial research is usually financed by large industries and is concerned primarily with benefiting large industry. The small businessman and the public often benefit from such research but that is ordinarily not the primary objective. Government research is necessary in addition to private research, for the advantage and protection of the consumer, small wood processors, and the general public.

As an agency of the Forest Service, the job of the Forest Products Laboratory is to

FLORIDA PULP and PAPER COMPANY
Depends upon
WARREN PUMPS

for important services at their modern mill at Pensacola, Florida, which was completed in 1941 and which was designed and built to make bleached and unbleached specialty papers. Original equipment included fifty-four Warren Pumps and several others have since been added — all giving on-the-job dependability with economical operating and maintenance costs.


Warren Type S. O. D. Pump handling 3½" Stock

Paper Machine Fan Pump

for every Pulp and Paper Mill Service
Specify Dependable
WARREN PUMPS

Pump for weak liquor to recovery room

WARREN STEAM PUMP CO., INC.
WARREN, MASSACHUSETTS

obtain scientific and technical information on forest products that is needed in the production of timber crops of suitable kind and quality, in economically converting timber crops into useful products, in increasing their serviceability and broadening their markets, and in their satisfactory distribution to and use by the ultimate user or consumer; and to disseminate and aid in the application of such information. In other words, the job is to obtain and disseminate information that will increase the knowledge about wood and other forest products in order to help in the solution of national, regional, and local forest products problems of all types, and that will contribute to the lowering of costs and improving the serviceability of present products and to the development of new produets.

The Effective Evaluation of Paper Surfaces for Printability*

V. V. VALLANDIGHAM, Technical Dept.
Kelco Company

▶▶▶ THE PRINTING OF paper has to do only with the paper surface and not the entire sheet composition. Therefore, in considering paper surface, thought need be given only to its lineal composition, that is, its length and width. When considered on this basis—namely, yardage and not tonnage, most paper is either written upon or printed upon. Since only a very thin film of ink is applied to the surface of paper, the importance of printability of surface is readily apparent.

Some inks set upon absorption. To get optimum printing results with inks of this type, the paper surface must be porous.

Other inks set upon polymerization or solvent evaporation. Such inks are used where finished prints exhibiting high gloss are desired. It is not sufficient, however, to just have an ink of this type. The paper must fit the type of printing desired. At this point, therefore, the efficiency of the paper surface becomes apparent.

The author's interest in the surface conditioning of paper developed from an effort to control and produce paper with uniform printability. There was an opportunity to apply various formulations on paper as a calender size. After sizing several hundred sheets, tests were made to determine the most efficient size formula.

The first test was made with dyed turpentine. Soon it was realized that the test was too severe. The turpentine soaked into the test samples so fast that readings could not be taken.

The next test was an ink test commonly used to evaluate the resistance of a sheet surface. This test consists of placing a quantity of ink on the surface of the sheet being tested and allowing it to set there for two minutes after which the sheet is wiped dry with a clean cloth. The degree of color change is then noted—the darker the smear of ink the greater the penetration. In case of a sheet sized 100 per cent with a continuous film, no penetration took place and the sheet color changed little if any.

This ink test relies mainly upon the human eye. It permits large differences between the grease resistance of test sheets to be detected. However, smaller differences are difficult to see. In addition, the color of the ink changes as the ink penetrates into a sheet. Readings, therefore, obtained immediately after the test is performed vary from readings taken half an hour later. The *p*H of a sheet also will affect the color.

Several sheets were tested by this method and the results compared with results obtained by using the butyl carbitol drop test. No correlation was found to exist between these two methods. The results obtained follow:

Ink Smear G. E. Reflectance Reading	*Butyl Carbitol* Readings in Seconds
39.9	116
42.9	76
42.0	81
44.0	47

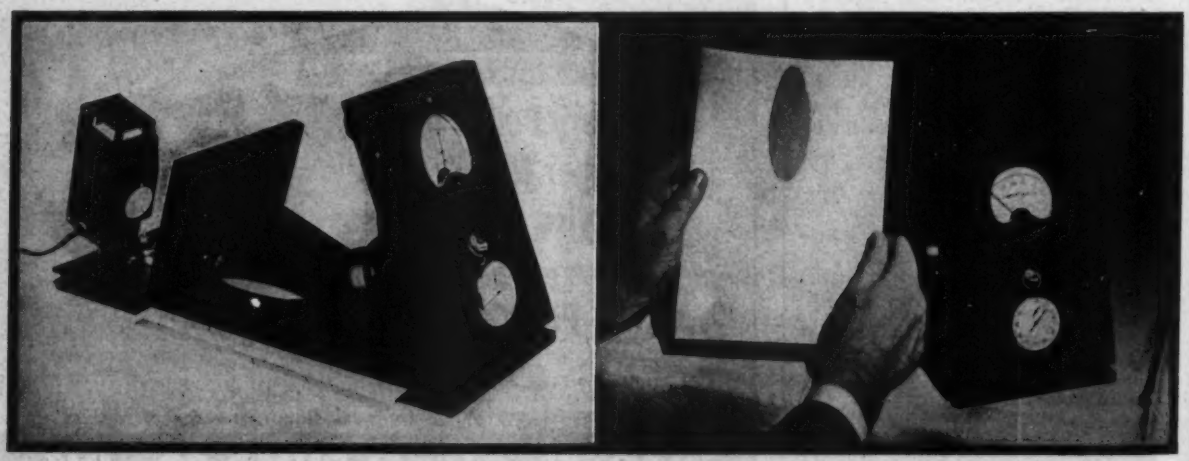
The readings listed under the ink smear test were obtained with General Electric Reflectance Meter which showed the difference in sheet brightness.

The butyl carbitol test, used frequently for evaluating gloss inks, consists of placing a drop of butyl carbitol upon a sheet surface and noting the time in seconds for the drop to disappear completely below the sheet surface. In using this test, it was noted that the apertures of different droppers varied. This variation allowed greater or smaller quantities of the butyl carbitol to be placed on a sheet. The time for these varying quantities to be absorbed by the sheet varied in direct proportion to the quantity of material used. It also was noticed that uniform drops could not be discharged from one dropper providing the angle of the dropper was varied. Likewise, observations revealed that varying the height of the dropper from the paper changed the reading due to the spread of a drop upon striking a sheet surface. The total time for the butyl carbitol to disappear below the sheet surface also varied with the position of a dropper.

After standardizing several droppers, a method of holding a dropper perpendicular to and at a distance of one inch above the sheet surface, was worked out. Tests then showed varying results with changes in sheet humidity.

The effect of moisture on the butyl carbitol test was next determined by dis-

*Presented at the October 15 (1945) meeting of the Chicago Professional Paper Group.



LEFT—Photoelectric absorption meter as developed to evaluate printability of paper surfaces. . . . RIGHT—Test sample showing oil spot—also stop watch and microampere gauge of photoelectric absorption meter

solving 1 per cent of water by weight into the butyl carbitol. It was noted that such butyl carbitol gave higher reading than butyl carbitol containing no water. In other words, butyl carbitol containing water took longer to penetrate a sheet surface than did butyl carbitol in the anhydrous form. Because of this condition, the test was discarded as it could not be used to evaluate sheets effectively.

Another fault in any of the drop test methods, whereby a quantity of material is placed on a sheet surface in a depth per area greater than the depth of the top liner, is that of a greater indication of the resistance of the entire sheet is obtained than of the surface size. In actual practice, the amount of ink used produces a film much thinner than the top liner. The ink shows no change in printing ability due to base sheet composition but fluctuates rapidly depending upon the resistance of the printing surface.

With such findings as background, it was concluded that the proper method of evaluating a sheet would be to lay down a thin film of oil which would not change with a change in moisture content of the paper and which would not be thicker than the depth of the top liner.

Then a test method in use was reviewed. In this method, a drop of oil was placed on the sheet surface and then the test sheet was pulled out from under a gelatin roller by hand. The roller was about 1½ inches in diameter and exerted a pressure of about two pounds per lineal inch. The type of oil being used for the test was about an SAE 30 Transformer oil. The time taken by the drop which spread to form an elliptical pattern to give 75 per cent penetration furnished the test reading.

The fault in this method lies in the rate of speed at which the sheet is pulled from under the roller and in the estimation of what point indicates 75 per cent penetration. If a sheet is pulled rapidly, the drop of oil would spread over a small area. On the other hand, if the sheet is pulled slowly, the drop covers a much greater area. The difference in the areas covered by equal sized drops indicated different thicknesses of oil. Therefore, the time taken for the oil to penetrate a sheet surface would vary, with a varying thickness of oil film.

In order the eliminate a varying thickness of oil, it was decided to spread the drop of oil at a uniform speed and to a uniform depth by allowing a steel roller to go down an inclined plane. An angle of inclination of one and a half degrees was found satisfactory to use with a heavy grade of mineral oil. The roller, used to spread the drop, is of stainless steel, and is 4¾ inches in diameter, 4 inches wide, and weighs 8 pounds. Light mineral oil was tried, but its rate of penetration was too fast to give a good reading. Rates in the vicinity of two or three minutes were preferred.

It was decided to place the drop of oil 6 inches from the point of contact of the roller to the sheet surface and to allow it to set for 5 seconds in order to form a constant pattern. Upon release of the roller, the drop of oil spread in an elliptical pattern. The disappearance of the gloss of the oil was observed visually until about 10 per cent of the spots of oil remained. These spots were decided to be faults in the sheet surface, such as hard spots.

Although a method for spreading a uniform film of oil had been developed, there was still the problem of human error in reading test results. It was not until some time later a photoelectric cell was utilized to read the rate of penetration of oil film into the sheet surface. The first instrument that was designed consisted of a 60-watt bulb placed at a 72-degree angle to the sheet surface and a photoelectric cell, also mounted at a 72-degree angle to the sheet surface, for picking up the reflection of the lighted bulb on the sheet surface. A large amount of light reflected by this instrument was diffused light, and this diffused light fluctuated with sheet color and basic sheet brightness.

Because of these inherent weaknesses, a second instrument was designed. This instrument was based upon the angle at which light would become polarized—thereby reflecting a straight beam and eliminating diffused light. The source of light was a projector bulb. A set of condenser lenses was used to develop a parallel beam of light. This lamp house was mounted in such a way that the parallel

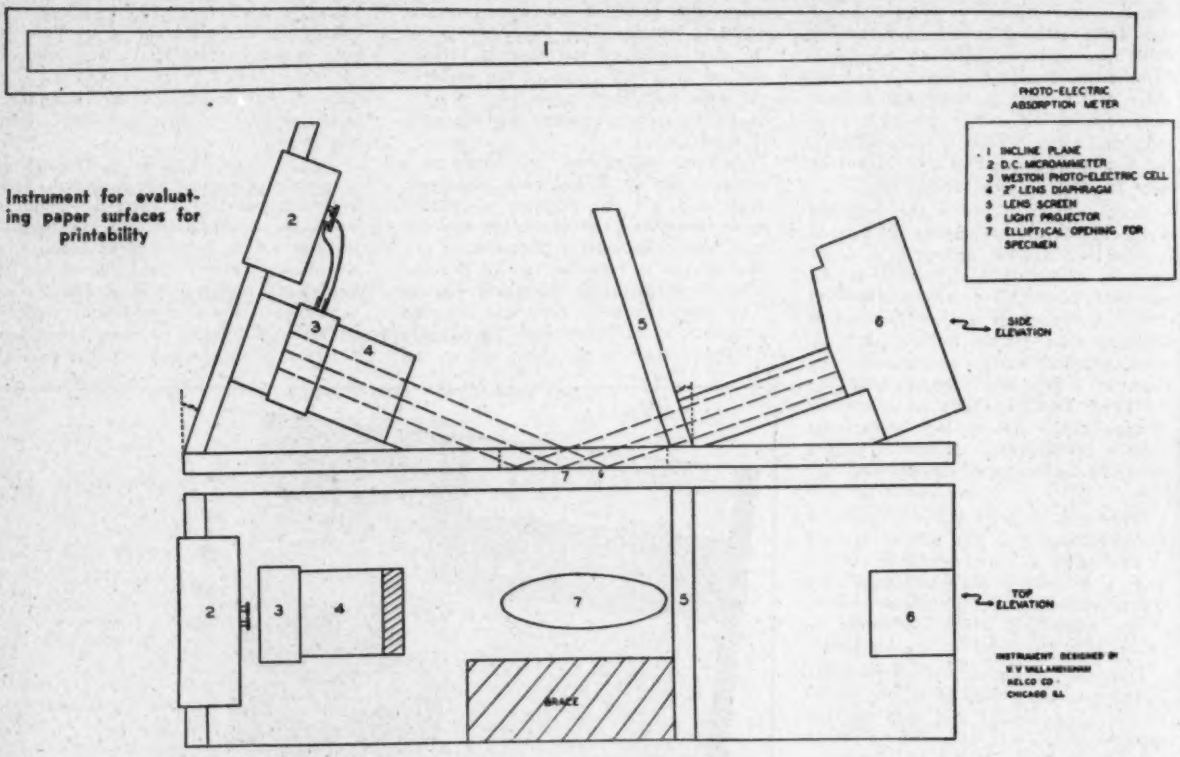
WHAT EVERY PAPER MILL ENGINEER SHOULD KNOW ABOUT NAYLOR LIGHT-WEIGHT PIPE

The new Naylor Catalog is a working tool for paper mill engineers. It gives you valuable data on the use of this distinctive light-weight pipe in paper mill service. For example, it lists applications on which Naylor Pipe can do a better job more economically. It explains how Naylor Pipe is built to give advantages found in no other light-weight pipe. And the revolutionary new Naylor coupling, fully described for the first time, will give you ideas to save time, work and money.

Write for your registered copy today

NAYLOR LOCKSEAM SPIRALWELD PIPE

NAYLOR PIPE COMPANY
1236 EAST 92nd STREET • CHICAGO 19, ILL.
New York Office: 350 Madison Ave., New York 17, N. Y.



Instrument for evaluating paper surfaces for printability

beam of light struck the sheet surface at a 22-degree angle. The photoelectric cell was mounted in a position to pick up the light reflected from the sheet surface. An iris diaphragm was placed immediately in front of the photoelectric cell to control the amount of light, thus permitting the meter to be set at a base point. By constructing the instrument in this manner, most of the diffused light is refracted at an angle which does not permit it to be picked up by the photoelectric cell. For the most part, only the light which is reflected from the sheet surface and traveling in a straight line is picked up by the meter. Therefore, the higher the gloss on a sheet surface, the greater the reading obtained.

The meter used for the instrument has a 100 microampere movement and its full scale reading shows 100 microamperes. The photoelectric cell, manufactured by the Weston Electrical Instrument Corporation, reads 3.5 microamperes per foot candle.

After a few initial tests it was found that the base gloss of a sheet was variable depending upon the amount of calendering and sizing. It was, therefore, decided to use 100 as a base point instead of attempting to adjust to zero. In order to set the meter at 100, it was necessary to develop a satisfactory means of obtaining a 100 per cent white sheet with 100 per cent gloss.

Sheet whiteness is best increased by the use of titanium dioxide. Reasoning that 100 per cent titanium dioxide would be the highest possible sheet brightness obtainable, it was concluded that the highest possible gloss obtainable would be a 100 per cent continuous film of oil cast upon a 100 per cent white sheet. Therefore, 20 per cent titanium dioxide was mixed into heavy mineral oil such as was used in the oil smear tests. Testing Oil Used: Stanolind—White Mineral Oil (U.S.P.-Heavy) Standard Oil Company. Then a film was cast upon a gloss surface and a reading taken. Several types of milk white gloss were tested until a gloss was found that gave the same reading as the film. This gloss is of a grade commonly used in laboratories.

Testing Technique

In order to have a uniform surface on the inclined plane, a ¼ inch thick plate glass was placed on a wooden frame. Likewise, a vertical board was mounted at the top of the plane and the roller placed against it.

To make a test, two drops of oil are placed at the same point on the sheet

FIG. I

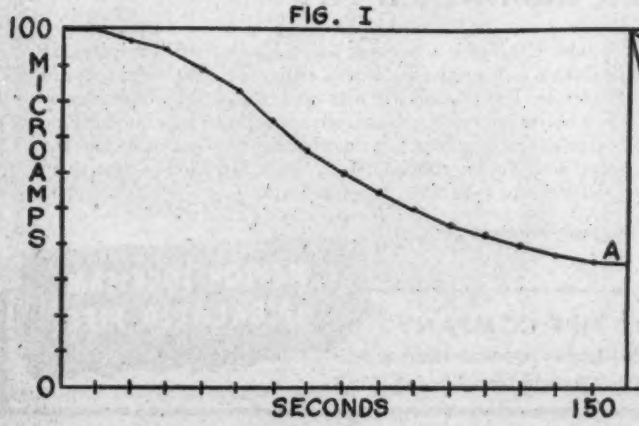
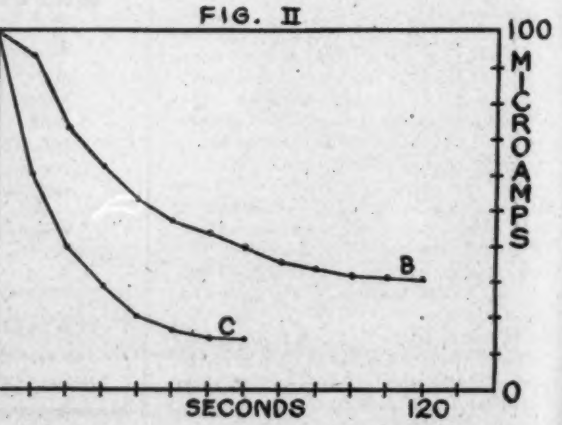


FIG. II



COMPRESSED AIR LINE PURIFICATION
YOUR PROBLEM?

Here's the Answer...

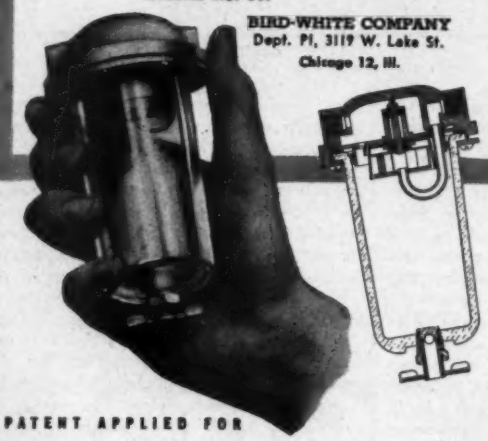
The new Bird-White Pur-O-fier A-1 assures you of positive elimination by turbo-rotor centrifugal action of all free moisture, oil and foreign matter in small compressed air or gas systems. It operates with from 1 to 5 cubic feet of air (1 to 75 p.s.i.) and for intermittent operation is extremely sensitive.

Among many other uses this new unit is ideal for protecting air pressure operated machinery and instruments from corrosion and gumming.

For complete specifications and applications write today for Bulletin No. 11.

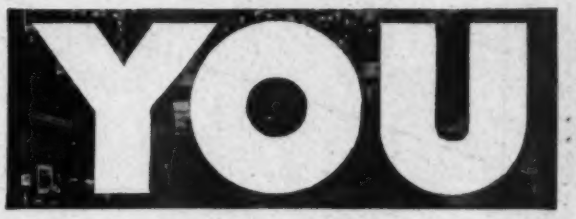
Bird-White Pur-O-fiers are also available in other models for purification of large volumes of compressed air or gas. Ask for Bulletin No. 10.

BIRD-WHITE COMPANY
Dept. PI, 3119 W. Lake St.
Chicago 12, Ill.



PATENT APPLIED FOR

how chemistry's war-born progress affects



Never before have such profound changes taken place in chemical industry—with so few details generally publicized—as in the war years just past.

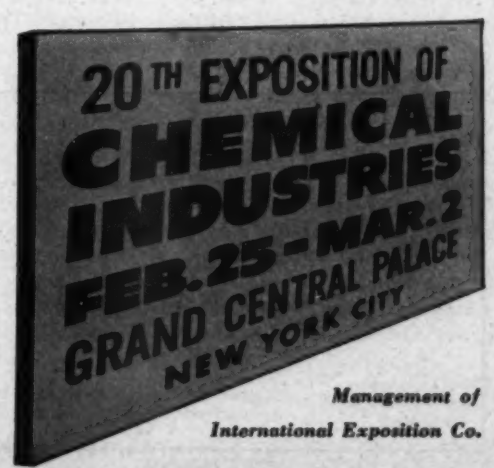
New techniques, new materials, new equipment, whole new chemical industries have sprung into being. Much has happened which, for security reasons, could not be revealed until now.

Here is your opportunity to see and hear how peacetime applications of war-born changes may affect your plants, your markets, your profits. It's the 20th Exposition of Chemical Industries, which will be held at Grand Central Palace in New York City, February 25—March 2, 1946.

What you will see at the exhibits, what you can learn there by talking with exhibitor's technical representatives, may shape your thought and actions for months to come.

For every chemist, chemical engineer, and production head throughout industry, this year's Exposition is—more than ever before—a "must". No executive responsible for the future of any business depending on chemical process, in his own or customers' plants, can afford to pass it up.

Attendance will pay you well. Be there with your associates!



Management of
International Exposition Co.

Papermakers Attention!

8 publications that you can really use!

Modern Pulp and Paper Making **$6.75**
O. S. Witham, Sr.
Second Edition, Revised and Enlarged. A book of 704 pages, written for machine tenders, beater men, and other practical mill workers, as well as for engineers, technologists, and executives.

Trouble on the Paper Machine ..... **.75**
Archie McCaffery
A Monograph—published in convenient pocket-sized edition. Bulk rates, in groups of ten or more, 60 cents per copy.

Technology of Papermaking Fibers ..... **.50**

Pulp Bleaching ..... **.50**

Lessons in Paper Making — Part 1 ..... **.50**
Harry Williamson

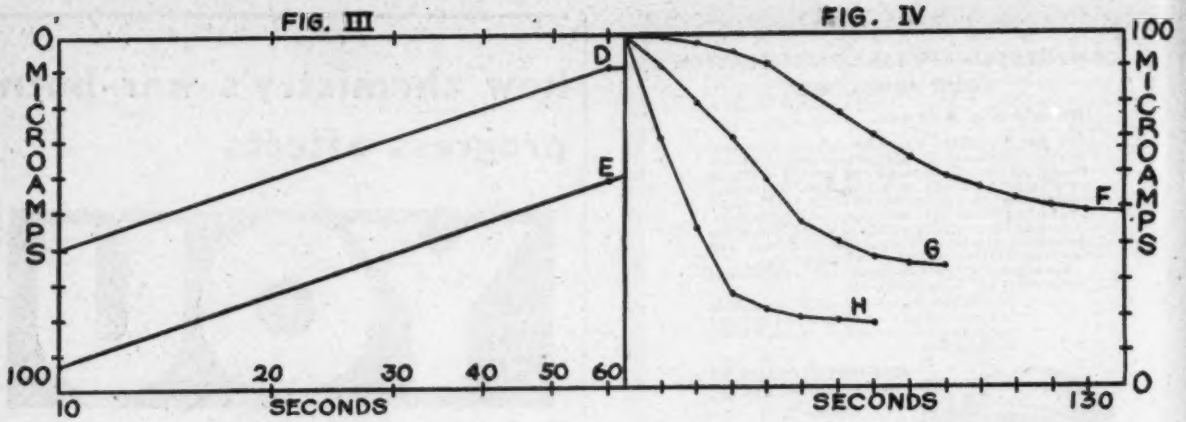
Lessons in Paper Making — Part 2 ..... **.50**
Harry Williamson

Drying of Paper on the Machine **1.50**
R. M. Baxter

Procedure Handbook of Arc Welding Design and Practice **1.50**
Seventh Edition—latest information on all phases of arc welding—1309 pages—1810 illustrations. Standard text in hundreds of schools and colleges. ($2.00 outside U.S.)

Now available postpaid from

FRITZ PUBLICATIONS, INC.
59 East Van Buren Street, Chicago 5, Ill.



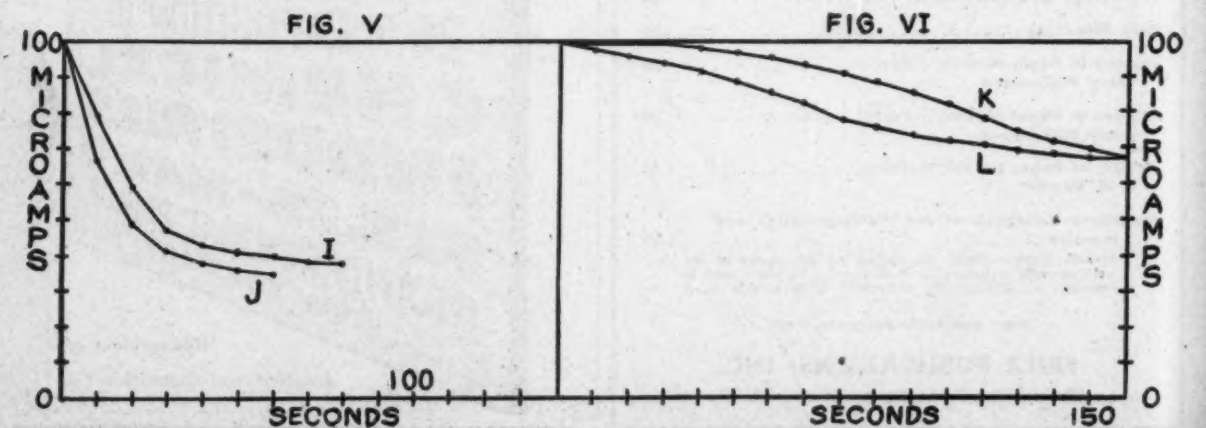
8 inches from the top of the plane (or 6 inches from the point of contact of the steel roller to the sheet) and allowed to set for 5 seconds. Then the roller is released and allowed to pass directly over the oil, spreading it into a thick film. A stop watch is started at the instant the oil is spread into a film on the sheet. The sheet is then placed under the light meter and the first reading taken at 10 seconds. Thereafter, readings are taken at 5-second or 10-second intervals as desired.

The readings are used to plot a curve, plotting the loss of light against time. The abscissa is marked off in divisions of one microampere. The ordinate is marked off in divisions of one second. Because of the manner in which the equipment is assembled, the first reading cannot be made until about 10 seconds after the oil drop is spread. Therefore, the curve is projected from the first reading at 10 seconds to the 100 microampere reading at zero second.

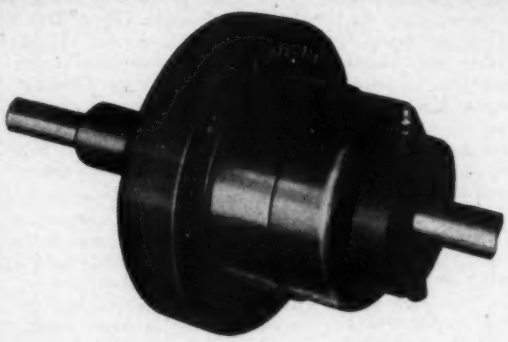
The graph, illustrated by Figure 1, shows the characteristic curve of the penetration of oil into a sheet surface. Curve A serves to demonstrate this function. To prove that this curve is the function of oil penetrating the sheet surface, a curve taking seven times the amount of time to penetrate the sheet as represented by Figure 1 was protracted. In this protraction the vertical divisions represented one minute instead of ten seconds. A curve then which fell off in only 80 seconds was expanded to a size so that the vertical divisions which originally represented ten-second intervals now represented five-second intervals. These two curves were then superimposed; and they were found to be the same. For the purpose of convenience in the curves illustrated, the abscissa is marked off in divisions of 10 microamperes; the ordinate, in 10 second intervals. By studying this curve it was found to be a logarithmic function and, therefore, representable as a straight line on logarithmic paper.

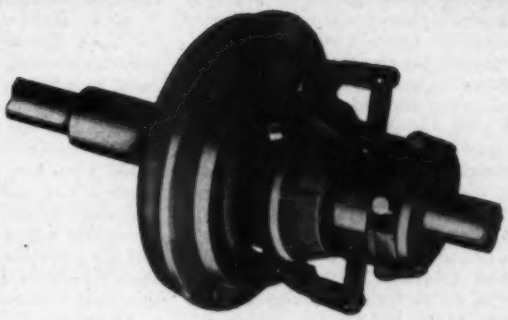
Curves were next run on two sheets of paper having different rates of resistance. These curves are represented by B and C in Figure 2. In this instance, because basic sheet gloss is a variable depending on smoothness, amount of surface sizing, and surface calendering, the end point, which denotes total penetration, is at different points. Therefore, all curves have been started from 100 microamperes at zero seconds. Curves B and C were plotted on logarithmic paper and are represented as Curves E and D, respectively in Figure 3. Examination of these curves, which are represented as straight lines on logarithmic paper (because the rate of penetration of oil into a sheet surface is a logarithmic function) shows that the straight lines are parallel, or. in other words, are equally distant at all points. Therefore, the significant difference between the two curves can be demonstrated at the point of initial penetration or as shown on the curves at 10 seconds. This finding bears out a point which the author long has believed—namely, that the efficiency of a resistant surface can be best demonstrated at the initial breakthrough of the oil. The zero readings, which show total penetration, are at different points and have flattened out due to hills and valleys in the sheets and to hard spots which will continue to resist oil even though the rest of the paper has shown complete absorption. In printing also, the weakest part of the surface is bound to absorb the largest quantity of ink the fastest. In fact, the printing quality of a sheet is judged by the factor which shows the most influence on either its resistance or penetration.

Curves F and G of Figure 4 show different rates of resistance of the same sheet because of different size formulations being used. These sheets, sent out for gloss ink printing, showed no significant difference in finished gloss because the ink had been selected to do a good job on the lowest curve which was G. Therefore, any sheet having a higher degree of resistance could show no improvement. In a situation of this kind, the ink could have been reduced for a sheet showing a resistance as noted by Curve F; or the size could have been reduced for the ink used on the sheet represented by Curve G. If the ink had been selected to fit the sheet represented by Curve F, the sheet represented by Curve G would have been far below standard in printing results. Curve H merely represents these sheets prior to



JONES-LEMLEY FRICTION CLUTCHES





JONES-LEMLEY friction clutches are built for a broad range of shaft sizes and ratings in both enclosed and open types for sleeve and coupling work. In addition they are available in a line of Jones-Lemley friction clutch pulleys. This clutch modification is also used for gears, V-belt sheaves, sprocket wheels, etc. Sizes, ratings, dimensions, prices and other data are contained in Bulletin No. 60. Your request will bring a copy.

W. A. JONES FOUNDRY & MACHINE CO., 4439 Roosevelt Rd., Chicago, Illinois

Jones

HERRINGBONE — WORM — SPUR — GEAR SPEED REDUCERS • PULLEYS
CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES • ANTI-FRICTION
PILLOW BLOCKS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES

"A small drop of ink falling like dew upon a thought produces that which makes thousands, perhaps millions think."
—LORD BYRON

IT is in the spirit of this quotation that we at Lindsay have woven wire cloth for more than 40 years. We believe that no so-called detail is too small to demand careful attention.

THE LINDSAY WIRE WEAVING COMPANY
Serving the Paper Industry Since 1903
14001-14299 ASPINWALL AVE., CLEVELAND 10, O.

Lindsay **WIRES**

HOW TO KEEP IN HOT WATER AND OUT OF TROUBLE!

● **Where it's essential to keep a steady supply of hot water, install the MARION GULF STREAM HOT WATER HEATER. Indispensable to hotels, office and apartment buildings, large institutions, and factories of all kinds where abundant hot water is essential and steam is available.**

Construction is simple. Water is heated faster through intimate contact with steam chambers adjoining. Internal parts float independently, avoiding strain from rapid contraction and expansion.

Low pressure steam is utilized with greatest economy. Inexpensive investment. Capacities range from 370 to 3700 GPH. Instantaneous type but can be used with storage tank.

Write Us Your Requirements and Let Us Solve Your Hot Water Problem!

THE MARION LINE

MARION MACHINE, FOUNDRY & SUPPLY CO.
Marion, Indiana, U.S.A.

sizing and is used in this case as a control.

In Figure 5, I and J. represent two curves which are very close in degree of resistance. These curves were taken from sheets used for actual printing of cartons. The ink which printed well for the sheet represented by Curve I fell far below on the sheet represented by Curve J. In this instance, it was not only a matter of losing gloss; but also the color of the yellow ink used was darkened to the point where it would not pass specifications. The difference in the reading at the first division, which represents 10 seconds, was the difference between 69 and 81. By taking this reading at the first ten seconds interval, a numerical value can be given to a sheet to denote its printability. In the case of Figure 5, the sheet represented by Curve I can be given a numerical value of 81. Sheets represented by this number or higher would give good gloss ink printing quality. On the other hand, sheets represented by Curve J, having a numerical value of 69, would be inferior.

Figure 6 is an example of an actual problem concerned with lithograph printing on a clay coated sheet for magazine cover stock. In this instance, the two sheets were printed with the same ink. The ink on one sheet continued to be rubbed off after a week of time. The other sheet showed that the ink had set properly. The sheet exhibiting the poor property is represented by Curve K—showing that the surface was too resistant for the normal penetration of this ink to enable the ink to set. On the other hand, the sheet represented by Curve L shows a normal rate of penetration, the ink being absorbed with proper set and without smearing. If these two sheets could have been evaluated prior to printing, necessary adjustments could have been made in the ink used on the sheet represented by Curve K, and proper setting would have been produced. The curves for these clay coated sheets come to equilibrium at 67 which is the base gloss of the sheets tested—evidence of the fact that the initial breakthrough is the significant index of sheet surface value rather than total penetration.

As long as the surface condition of a sheet of paper is one of the most important factors in printing, it is believed that there should be a test to evaluate the surface and not the entire sheet.

In order to check a paper for printability at the time of manufacture, the test should evaluate only its surface, be free from human error, not fluctuate with variation in sheet color, give consistent results correlating with printing and require only a few minutes to run. For these reasons and other, the Photoelectric Absorption Meter was developed.

A Study of the Melamine Resin Process for Producing Wet Strength Paper*

C. G. LANDES and C. S. MAXWELL
American Cyanamid Company

In 1943, an excellent review of the literature on wet strength paper was published by Collins. (PAPER IND. AND PAPER WORLD 25, No. 3: 263-269, June, 1943). Of the many wet strength processes suggested up to 1942, only a few have survived in commercial practice.

About two years ago, after extensive laboratory and field tests had been completed, a new process was announced for the production of wet strength paper. This process, as described briefly by Maxwell, (*Paper Trade J.* 116, No. 19: 39-42, May 13, 1943); *Tech. Assoc. Papers* 26: 309-312, June, 1943); *Pacific Pulp Paper Ind.* 17, No. 4:6-8, April, 1943) involved addition to the paper machine slush stock of small amounts of a melamine resin colloid prepared according to a patent recently issued to Wohnsiedler and Thomas (U. S. Patent 2,345,543, March 28, 1944). The introduction of the new process in 1942 was followed by an immediate increase in the production and use of wet strength paper.

Naturally, the availability of this new method has stimulated interest among paper manufacturers and users in the development of a wide variety of new grades of paper having wet strength properties, and directed not only to fulfilling critical war requirements but also toward expanding the general usefulness of paper. A few of the uses for resin treated paper have been indicated in recent articles by Kumler (*Paper Mill News*, 66, No. 25: June 19, 1943); Zaumeyer (*Paper Trade J.* 117, No. 1: 25-28), (T. S. 1-4, July 1, 1943); Freeman (*Paper Mill News* 67, No. 33: 10-12, August 12, 1944), and Britt (*Chemical Industries* 55, No. 5: 734-737, November, 1944). Grades mentioned include bag, map, tag, food wrap, toweling, tissue, photographic and blueprint stock, coating base stock, impregnating stock, twisting, and many others.

An interesting point, in connection with the expanding use of the melamine resin colloid process, has been the realization that "something new has been added" to the treated paper, aside from the increase in wet strength which was the original objective. It has been found that dry tensile and dry bursting strengths are improved considerably.

By virtue of such benefits, the use of melamine resin is expanding to grades such as bond, coating rawstock and others where the wet strength imparted forms only one of the minor reasons for addition of the resin.

The use of melamine resins for wet strength paper has progressed so rapidly that very few mills or laboratories have been able to investigate the fundamental aspects of the process, or even to cover the effects of all the operating variables that are encountered in the practical application of any new process to papermaking. In fact, the only technical article covering to any extent fundamental aspects of melamine resin treatment of paper, other than references previously cited, has been an interesting publication by Britt (PAPER IND. AND PAPER WORLD 26, No. 1: 37-46, April, 1944).

In the authors' laboratories, studies relating to the application of the melamine resin colloid to paper have shown a number of interesting results, some of which have been of assistance in increasing the efficiency of the treatment. Also, co-operative studies with paper mills, government agencies, and others have brought to light many factors of practical importance relating to the manufacture and use of wet strength paper. It is the object of this paper to present the results of some of this work, with the hope that it will be

(*) Abridgment of paper presented "by title" at the annual meeting of the Technical Association of the Pulp and Paper Industry, held in New York City, February 19, 1945.

ENGLISH ECCO CLAYS TRADE MARK CLAYS
UNIFORM • SUPERIOR • DEPENDABLE
English China Clays Sales Corporation
551 Fifth Avenue, New York City

"Let us not pray for lighter burdens,

but for stronger backs."

KALAMAZOO VEGETABLE PARCHMENT CO.

Parchment — Kalamazoo — Michigan

HARDY S. FERGUSON & COMPANY

CONSULTING ENGINEERS

200 FIFTH AVENUE NEW YORK 10, N. Y.

Hardy S. Ferguson—Member *A.S.C.E. A.S.M.E. E.I.C.*

Moses H. Teare—Member *A.S.C.E. A.S.M.E. E.I.C.*

Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

- PULP AND PAPER MILLS AND OTHER INDUSTRIAL PLANTS
- STEAM AND HYDRO-ELECTRIC POWER PLANTS
- DAMS AND OTHER HYDRAULIC STRUCTURES

PERFORATED METAL *Screens*

Precision perforations in all sizes for large production and screen durability

Copper • Steel

Monel • Stainless Steel

Chemical Resisting Alloys

The Harrington & King PERFORATING Co.

5654 Fillmore St., Chicago 44, Ill. 144 Liberty St., New York 6, N. Y.

PAPER TOWELS

THERE will be more of them used after the war period. • We build highspeed, towel roll winders, interfolders and embossers. Printers and sheeters for your label problems. • Specifications and prices mailed you on request.

HUDSON-SHARP

MACHINE CO • GREEN BAY • WIS

of assistance in obtaining maximum benefits from the use of melamine resins, and in stimulating paper mill laboratories to conduct additional research directed toward the same end.

The first melamine resin used commercially for producing wet strength paper by a "beater addition" process, as described by Maxwell was marketed under the name "Paper Resin 607." This resin was a melamine-formaldehyde product of a low degree of condensation and was soluble in hot water up to about 20% solids.

More recently a slightly modified resin (Parez 607; trade-mark of American Cyanamid & Chemical Corp., and applies to its synthetic resins for use by the paper industry), has been introduced and, due to the improved results obtained, has entirely supplanted the original type. The new resin is a melamine-formaldehyde product of a moderate degree of condensation, with properties as shown in Table 1.

The method originally used for preparing the melamine resin solution was to dissolve the resin in an aqueous hydrochloric acid solution at 140 Fahr., with a resin solids content of about 20%, and then dilute with cold water to 12%. (*All resin solids percentages are expressed on a weight-volume basis, equivalent to grams per* 100 ml.) After aging at room temperature for at least 12 hours, the solution was ready for use. In this solution, the molar ratio of resin to acid was approximately 1 to 1.

The modified procedure, introduced commercially shortly after the change from the original resin to the modified form, is similar in general to the original procedure, but with the following differences:

1. The amount of acid has been reduced so that the ratio is now about 1 mol. of resin (as monomer) to 0.8 mol. of HCl.

2. The procedure has been simplified in that the acid is added to the full quantity of water required for a 12% resin solution, and the resin then stirred into the acid-water solution at 80 to 100 Fahr. The intermediate steps of heating and dissolving at 20% solids are eliminated. This simplification is possible partly because of the fact that the fine, spray dried particles of the modified resin are more easily dispersed in acid solution than was the case with the earlier resin.

3. Minimum time for aging the 12% solution has been reduced to 3 hours.

Table I—Properties of the Modified Resin

Form	Dry white powder
Particle size	98% passes through 100 mesh
Apparent density	0.4 (approx. 25 lb./C.F.)
Water solubility	Disperses in water with agitation at 50 to 60% solids, but hydrophobes out on further dilution
Moisture content	3% maximum
Nitrogen content	37 to 40%
Factor (x Nitrogen = % Resin)	2.6
Viscosity (60% solids —25°C.)	300 to 700 cp.
pH (60% solids dispersion)	Approximately 9

The standard laboratory procedure for preparing resin solutions for treatment of paper stock is given below. Commercial batches are prepared in exactly the same way, making due allowances for the size and type of handling equipment required (American Cyanamid & Chemical Corp., Heavy and Paper Chemicals Dept., Tech. Bull. 9B and 13).

Formula	By Weight g.	By Volume ml.
Water (between 80-100 Fahr.)	183.1	184.3
Muriatic acid (20° Be*)	9.9	8.5
Total water plus acid	193.0	197.7**
Resin	25.0	(25.0 g.)
Total, final volume	218.0	208.0

During the course of research work conducted during the past few years, it has been found that during aging of the melamine resin-acid solution at room temperature definite changes occur in the following properties:

1. Resin particle size
2. Resin particle charge
3. Solution "viscosity"
4. Stability to precipitation by acids or electrolytes
5. Stability to precipitation by water miscible solvents
6. pH of solution
7. Amount of free formaldehyde in solution
8. Surface activity

The study of the nature and cause of these changes offers great complexities, but it is hoped that the results of some of these fundamental studies can be described by the various workers concerned, in the near future.

Although the use of melamine resin in the paper mill is sufficiently "foolproof" to permit obtaining reasonably good results in practically all cases, it is true that certain factors sometimes affect the efficiency of the treatment. Since the resin is more expensive, on a unit cost basis, than most of the other materials furnished, it is important to maintain efficiency at the highest possible point.

In general, the later the resin is added to the slush stock prior to actual sheet formation, the better the wet strength efficiency, but there appear to be some exceptions to this. Therefore, during development of any standard grade of wet strength paper, it is important to experiment with different points of resin addition to make sure that the optimum point has been found.

The type of fiber and the degree of

*20° Be muriatic acid contains 31.45% HCl. If acid of higher or lower HCl content is used, suitable adjustments should be made so that the amount of HCl and the total volume of water plus acid both remain constant.

**In laboratory practice it is easier to dilute the acid to approximately 190 ml., dissolve the resin and then add sufficient water to bring the final solution to exactly 208 ml.

Procedure

The acid should be stirred into the water, and then the resin added to the solution with constant agitation until the resin is dissolved. The resin solution is aged (at 12% resin solids) for at least 3 hours at 80 to 100 F., and can then be used for making wet strength paper at any desired aging time from 3 hours up to several days. A convenient practice is to prepare the solution one day, and use it the next.

Mr. Engineer:

Meet PUMPS *by Aurora*

Pumps "by Aurora" are well worth knowing—efficient and lasting—sizes for practically all requirements. Built by exclusive makers of fine pumps who regard EVERY pumping job IMPORTANT.

We invite you to acquaint yourself with the comprehensive line of Aurora Centrifugal and Apco Turbine-Type pumps—a size and type for practically every pulp and paper mill pumping requirement.

Aurora Deep Well Turbines for all conditions—4" to 24"

NSA Aurora Centrifugal Sump Pump

Type AD Hor. Split Case, Two Stage Centrifugal

Type OD Hor. Split Case Double Suction Single Stage Centrifugal

Type GGU Single Stage Side Suction Centrifugal

APCO Horizontal Condensation Return Unit

Apco Turbine-Type Pumps
The simplest of all pumps. Ideal for small capacity, high head duties. Silent, compact and lasting.

APCO Single Stage Turbine-Type

SEE OUR CATALOG IN SWEET'S

—OR— *Write for* CONDENSED CATALOG M

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA Always PUMPS

AURORA PUMP COMPANY

110 Loucks Street, AURORA, ILLINOIS

"hydration" (as obtained by variations in beating or refining) have an important effect on the retention of melamine resin colloid and on the sheet strength properties obtained. The effect of variations in mechanical treatment of a specific stock has already been indicated by Maxwell (*Paper Trade J.* 116, No. 19: 39-42, May 13, 1943); *Tech. Assoc. Papers* 26: 309-312, June 1943); *Pacific Pulp Paper Ind.* 17, No. 4: 6-8, April 1943).

It already has been pointed out that a number of chemical and physical changes take place as melamine resin-acid solutions age, and that variation in solution and aging conditions affect these changes to a marked degree. More important, from the practical viewpoint, is the fact that retention of the resin by papermaking fibers, and the wet strength properties of the finished sheet, also vary appreciably as the solution is aged.

Although wide variations in the resin colloid can be obtained by selecting various resin dissolving and aging conditions, it is fortunate that by proper choice of these conditions, it is possible to prepare a resin solution that attains its peak efficiency within a few hours after preparation, and which maintains its efficiency over a period of days without danger of gelling.

The most important factors governing the cure of thermosetting resins are stock pH, drying temperature, and drying time. The melamine resin colloid cures easier than most other thermosetting resins, and, therefore, it usually is possible to balance the variables mentioned above so that a substantial degree of cure is obtained on the paper machine. Additional wet strength often develops after the paper is aged several days, particularly if the sheet is wound hot and stored in roll form.

It is difficult to duplicate by laboratory experiments all of the variables encountered in commercial practice, and for this reason it is frequently helpful to make a thorough study of the effect of paper drying conditions on wet strength efficiency, right in the paper mill itself. This is particularly desirable if samples directly off the machine show a large increase in wet strength after being given an additional cure of 10 minutes at about 260 Fahr. in a laboratory oven. Factors that should be studied include rate of drying, drier temperature gradient, moisture content of sheet entering dryers and of finished sheet, etc. Another point to check, if the sheet is tub or calender sized or water finished, is the possible adverse effect of alkaline or buffering materials that might be present in the solution used.

All colloids are affected by the presence of electrolytes in solution, but the effects vary widely depending upon the type of colloid, nature of the electrolyte, and other factors. Laboratory experiments have indicated that the presence of an excessive concentration in the stock of a polyvalent anion (e. g., sulphate) may result in partial flocculation of the melamine resin colloid and a decrease in wet strength efficiency. Further investigation is required to determine the significance of this observation with respect to practical mill operation.

As with any new papermaking process or material, there usually are "a few thorns with the roses," and the melamine wet strength process is no exception. One of the desirable properties of paper treated by the process is that the wet strength obtained is substantially maintained under a wide variety of aging and exposure conditions. This property is, however, the direct opposite of what is desired when the papermaker starts to defiber wet strength broke or wastepaper for reuse in his process.

Fortunately, one solution to this problem has been found, based upon the fact that the melamine resin in the paper can be broken down by hydrolysis under suitable conditions of temperature and pH. The time required to defiber the resin treated paper is dependent primarily upon two factors:

1. pH—The lower the pH, the less the time required.
2. Temperature—The higher the temperature, the less the time needed.

The following specific methods of defibering wet strength broke are being successfully used under commercial conditions:

1. The broke is added to hot water (170 to 190 Fahr.) in a beater to which also has been added 2 to 3% alum on the weight of the fiber. The stock is then circulated or beaten until defibered. It is usually helpful to mechanically shred the

TO MEET PEACETIME PRODUCTION REQUIREMENTS

STICKLE DRAINAGE & CONTROL

● Stickle Control combines with Stickle Drainage increased production volume, assures quality improvement with greater uniformity, and decreases cost of steam.

These advantages are attained with positive and rapid circulation of steam through dryers with rapid removal of condensate and air: maintenance of heat at correct drying temperatures with desired moisture content; and by reducing waste through decreased back pressure and by-passing.

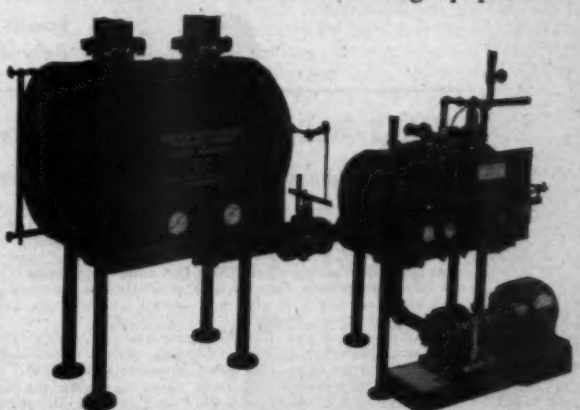
Stickle Automatic Control may be had with either Stickle Individual Trap Drainage or Stickle Differential Drainage. Visible operation is included with either type of drainage.

The new Stickle Bulletin for Paper Mills illustrates and describes the various Stickle Elements from which complete drainage and control systems are constructed and adapted to meet specific operating conditions. Also other cost-reducing equipment.

THE STICKLE LINE

- Differential Drainage System
- Differential Boiler Return System
- Combined Flash and Receiver Trap
- Automatic Steam Control
- Automatic Tension and Thermal Attachment
- Visible Micro Adjustable Orifice
- Sight Feed Flow Regulator and Sight Glasses
- Vacuum Blast Coil Heater
- Heat Reclaimer
- Open Float Steam Traps
- Open Coil Feed Water Heaters and Other Specialties

Ask for your copy of new Stickle Bulletin for Paper Mills, No. 160



Flash Tank and Pumping Unit of the Complete Stickle Differential Drainage and Boiler Return System. Differential drainage with differential boiler return affords extra savings in steam cost to mills operating at higher pressures.

Stickle STEAM SPECIALTIES COMPANY
2215 VALLEY AVENUE • INDIANAPOLIS, INDIANA

dry broke or waste before adding to the beater.

2. Special equipment, such as a Dilts Hydrapulper, gives excellent results in handling almost any form or type of broke. It is convenient to add the broke, water and alum, and then heat and allow to soak a while before actually defibering.

3. Pressure treatments, in digesters or rag boilers, have been found particularly effective where such equipment is available. The addition of alum or other acidic materials may not be required if the temperature is sufficiently high. Convenient means must, of course, be available for charging and discharging the stock.

The efficient reuse of broke and waste is of considerable economic importance, and further research is being conducted in an effort to improve the methods available or to develop better ones.

Another problem that has accompanied the increasing use of wet strength resins is that of rapidly identifying paper so treated. This problem is not too serious in mills that handle only their own broke or trim as it can be carefully segregated and then defibered separately. However, in the case of waste from printing or converting plants, or mixed waste papers accumulated by the wastepaper dealer, a much more difficult situation can arise. In order to properly classify and treat such waste, it would be highly desirable to be able to quickly and accurately determine whether wet strength paper was present, and if so, the nature of the resin or treatment which had been used.

It is possible to identify the nature of the wet strength agent in paper by means of laboratory tests, but these require appreciable time and the services of a trained chemist, and are not suited for the examination of large quantities of mixed papers.

From the practical standpoint, a quick and simple procedure is required, one by which any paper mill operator or wastepaper dealer can easily determine the nature of the treatment either by visual observation or application of a test requiring only a few seconds.

During the course of three years' commercial use of the melamine resin colloid process in mills throughout the country, surprisingly few machine operating troubles have been encountered and these have generally been eliminated by minor process modifications. Corrosion of equipment by the hydrochloric acid of the resin solution has not been evident, except possibly in a few instances where the pH was not adjusted to the normal operating point.

Likewise, no indication has been obtained to date that the presence of the small amount of acid added to the furnish with the resin has any deteriorating effect on the aging quality of the paper, provided that adequate precautions are taken to maintain the pH of the stock and paper at the proper values. Obviously, however, a number of complex factors must be critically evaluated before any conclusions can be drawn with regard to the effect of the resin treatment on the life of papers that are expected to last for hundreds of years.

The permanence of paper is affected by numerous paper quality and use variables, as indicated by the extensive literature which has been reviewed to 1939 by Kantrowitz, Spencer, and Simmons (U. S. Government Printing Office, Technical Bulletin No. 22, 1940). Aside from fiber purity differences, one of the most important factors found to affect permanence adversely is the presence of excessive acidity as indicated by titration and pH tests on the water extract from the paper. A common method of classifying papers as to expected permanence is the heat stability test (TAPPI 453 m-41), in which the folding endurance is measured before and after heating for 72 hours at 105° C. It has been stated that little or no drop in fold is indicative of a high degree of permanence.

Tests on a number of untreated versus resin treated papers have varied over a wide range, some showing no decrease or an actual gain in fold after the oven aging test, while others have shown a decrease in fold to 25 to 50% of the initial value. In nearly all cases, however, the final folding endurance of the resin treated sheet has been higher than that of a comparable untreated sheet.

It is evident that variations in cure of the resin, prior to or during the oven aging test, affect the fold values obtained thus introducing a variable not necessarily related to permanence. Consideration of the data indicates that critical re-examination of the heat stability test is required before it can be safely used to indicate the permanence of resin treated paper.

During the course of extensive laboratory investigations of wet strength problems, several factors have been found to be of special importance in obtaining accurate and reproducible results. These observations are presented as a matter of service to laboratories in the paper industry that are conducting investigations in this field.

For determining wet strength efficiencies, it is, of course, necessary to make the test handsheets under carefully standardized conditions. Such factors as stock hydration, pH, order of addition of chemicals, and time of contact of chemicals with the stock should be held constant when other variables are being studied. In the authors' laboratories standard TAPPI sheet making and sheet testing procedures are followed, except for certain modifications or special provisions as indicated below:

1. A circulating white water system for the sheet machine is desirable for most work, to assure fiber and pH conditions more comparable to commercial practice. Sufficient sheets should be made to reach equilibrium, before the test sheets are prepared.

2. The sheets are pressed between blotters only, instead of between blotters and plates as in TAPPI procedure T-205-m.

3. Sheets (if approximately 50 pounds, 25×40—500) are dried on a blueprint drum drier for 1 revolution (60 sec.) with the drying cylinder held at 240° F. Drying conditions are varied for higher basis weights.

4. The time intervals between sheet formation and pressing, and between pressing and drying, *are very important* and

FOR VALVE
REMOTE
CONTROL
Chemical
Paper
Foods
Petroleum
HILLS-McCANNA diaphragm valves
(SAUNDERS PATENT)
with Westinghouse Flex-air and Controlair Controls
HERE'S an efficient and practical way to control valve operations from any convenient point in your plant . . . with Hills-McCanna air-actuated valves. This unit combines the proved principle of the Hills-McCanna Diaphragm Valve with Westinghouse Flex-air and/or Controlair Controls and air-operated piston to give you smooth control . . . fingertip service at all times.
And since this new Hills-McCanna unit . . . like all Hills-McCanna valves . . . has no packing, there's no sticking of the stem to interfere with easy, accurate positioning.
For ordinary open and close valve operation the Hills-McCanna unit is used with Flex-air Controls. Dependable throttling service may be had with Controlair and Flex-air Controls and a Hills-McCanna Diaphragm Valve and Piston operation.
This improved type valve is available in sizes from 4" to 12" inclusive. Send today for complete data on installation and operation.
HILLS-McCANNA COMPANY
2433 W. Nelson St., Chicago 18, Ill.
Proportioning Pumps — Force Feed Lubricators — Chemical Valves
Air and Water Valves — Marine Valves — Magnesium Alloy Castings

FOR a Razor-Keen Edge that STAYS KEEN

ATKINS

Paper Knives

Why do Atkins Paper Knives consistently make cleaner, smoother cuts for longer periods of cutting? It's the result of using finest alloy steel obtainable... heat treating it scientifically... then grinding to a razor-keen edge. That's why, in numerous cases on record, they are reported as giving double to many times the service of previous knives.

Yes, Atkins Paper Knives mean quality cutting, more cuttings per grinding, and lower knife costs. Get these advantages on your cutting operations... Specify Atkins Paper Knives on your next order.

E. C. ATKINS AND COMPANY • 453 South Illinois St., Indianapolis 9, Indiana

Agents and Dealers in all Principal Cities the World Over

should be standardized carefully as will be described in more detail later.

5. The dried sheets should be conditioned and then tested at some standard interval after drying. This is because full cure of thermosetting resins is not always obtained with normal drying procedures, and the wet strength will progressively increase for several days or even weeks. A convenient procedure is to form and dry the sheets 1 day, then condition (TAPPI 402-m) for about 2 days before testing. At this point changes in wet strength during the working day will be slight.

6. Wet tensile and burst tests are made after soaking the samples in water for 16 to 25 hours.

Particular attention is called to item 4 above, relating to control of the time intervals between sheet formation, drying and pressing. During the early part of the laboratory work on melamine resins for wet strength, unexplained variations in the results occurred. At this time the customary procedure, when making several sets of handsheets, was to accumulate all the sheets between damp blotters on the press (extra long bolts) and then press all the sheets at one time. It was noted that the last sheets made usually showed higher wet strength values (after drying and subsequent testing) than the sheets made earlier.

Investigation of this discrepancy revealed the interesting fact that there is a progressive drop in the wet strength properties of the finished sheet depending upon the time intervals between forming and pressing and between pressing and drying.

Regardless of what factors might be involved, existence of a short time interval between sheet formation and pressing contributes to maximum wet strength values, and probably permits closer approximation of commercial operating conditions. This suggests that use of a continuous roll-type press, such as supplied with the Noble and Wood sheet machine, might give better results in wet strength evaluations than the usual type of hydraulic press which requires batch operation, with resulting

COLORS . . .

for Board and Paper

Green Chromium Oxides

Black, Brown, Red, Yellow Iron Oxides

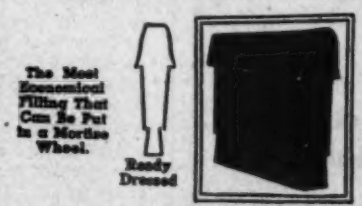
Lamp Black—Umbers—Venetian Reds—Yellow Ochres

C. K. WILLIAMS & CO.

Easton, Pennsylvania

"READY DRESSED" MILL COGS

LABOR SAVING—TIME SAVING


The Most Economical Filling That Can Be Put in a Mortise Wheel.
Ready Dressed
Blank Head
We Make Any Style or Size Wanted.
Write for Instruction Sheet "O" Which is Free.

QUICK SERVICE ON ALL SIZES

THE N. P. BOWSHER CO., South Bend, Ind.

ROOFING MACHINERY
MANUFACTURING CO.
Factory and Office
1130 W. Cornelia Ave., Chicago 13, Ill.

•

Designers and Builders of
Tar and Asphalt Saturators
Laminating Equipment
Embossing Units (brick siding, etc.)
Asphalt Coating Machinery
Looping, Drying and Cooling Systems
Winders for Roll Roofing
Shingle Cutting Machines
Wax and Lacquer Coating Machinery

•

We also manufacture cutting cylinders, anvil rolls, and squeeze rolls. We make a specially constructed steam jacketed 2" and 3" pump for handling viscous materials such as filled asphalt, heavy lubricating oils, and kindred products.

Pump catalogue upon request.

We offer safe, economical solutions to all pulp and paper mill drainage problems with our twill weave, plain weave, sewed seam, and soldered seam wires.

•

International Wire Works

Menasha, Wisconsin

longer time before drying. However, since the degree of pressing also affects wet strength results, a continuous type press would have to be carefully standardized.

In the meantime the following procedure, involving the regular British sheet machine and press, has been used fairly satisfactorily. For each trial a sufficient number of sheets is run to bring the white water system to equilibrium, and these sheets discarded. Then fifteen sheets are made as rapidly as possible, and accumulated between blotters on the press. Each sheet is numbered serially with indelible pencil. After the set (fifteen sheets) is completed, pressing and drying operations are conducted as rapidly as possible; the total time for forming and drying the sheets is about 30 minutes. Although there is a slight change in wet strength from the first sheet to the last of any set, this variable is minimized by testing all of the sheets, or by selecting sheets of identical serial number.

It is not possible at this time to publish details of the fundamental and theoretical work on wet strength paper that is being conducted in the various divisions of the laboratories with which the authors are associated. This applies not only to the studies of the resin colloid itself, which have already been mentioned briefly, but also to investigation of the mechanisms of resin retention and wet strength development in paper. Since a knowledge of the fundamental nature of the process should assist in utilizing it to full advantage, it is hoped that the following brief discussion of some of the work in progress will be of interest, and that more detailed reports can be presented in the not too distant future.

Particle size, shape, and molecular weight are important characteristics of a substance. In the present case, however, some of the common methods of obtaining such data are not applicable. By electron microscope observations and other means, it has been indicated that the maximum "diameter" of the bulk of the melamine resin colloid particles is approximately 200 Angstrom units (0.02 microns), with the probability that particles even smaller than 100 A in diameter are present.

Sorption studies have indicated that the resin is rapidly adsorbed by cellulose, the process apparently being essentially irreversible under papermaking conditions. The adsorption is undoubtedly influenced by the fact that the melamine resin colloid particles are positively charged and the cellulose negatively charged.

Interesting experiments have been performed by comparing the effects of the melamine resin treatment on the ultimate strength of the fibers of the sheet and the "adhesion" or bonding between the fibers. Analysis of the data indicated that adhesion between both wet and dry fibers is increased appreciably, but that ultimate fiber strength is increased only moderately or not at all. These results are intimately connected with the important question of the distribution of the resin on and in the fibers.

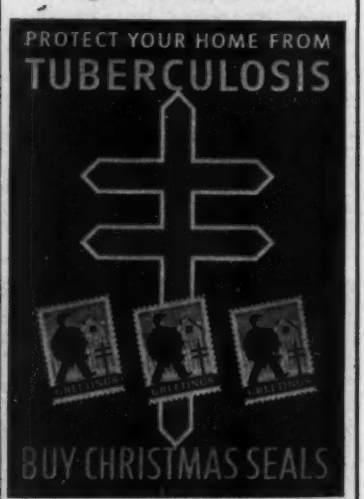
Results of the above studies correlate well with the practical data already de-

THE WATERBURY FELT CO.

The Trade-Mark of
Dependable, Long Life Felts

SKANEATELES FALLS
NEW YORK

Christmas Seals Fight Tuberculosis



39th Annual Christmas Seal Sale
Nov. 19-Dec. 25, 1945

PAPER MILLS ATTENTION

NEW COPPER TUBING

FOR IMMEDIATE DELIVERY

AT LESS-THAN-MILL-PRICES

DIAMETER	WALL THICKNESS	LENGTHS
1.66" O.D.	.072"	20'-0"
4.5" O.D.	.083"	12-20'0"
6.125" O.D.	.075"	20'-0"
6.625" O.D.	.081"	20'-0"
7.125" O.D.	.083"	12-20'-0"
7.625" O.D.	.093"	12-20'-0"
8.625" O.D.	.105"	12-20'-0"
10.75" O.D.	.131"	12-20'-0"

ALSO NEW STAINLESS STEEL SHEETS, PLATES AND TUBING

WRITE FOR PRICES AND FULL PARTICULARS . . .

ACME COPPERSMITHING & MACHINE CO., ORELAND, PA.

RYERSON STEEL

IN STOCK FOR PROMPT SHIPMENT—
JUST CALL YOUR NEARBY RYERSON PLANT

Partial List of Ryerson Products:

Alloy Steels	Stainless	Threaded Rods
Bars—Shapes	Boiler Fittings	Rivets—Nuts
Structurals	Reinforcing	Chain—Wire
Rails—Plates	Floor Plates	Tubing
Sheets—Strip	Tool Steel	
Shafting—Bolts		

RYERTEX NON-METALLIC BEARINGS

Water, Oil or Grease lubricated. These bearings wear longer; reduce power consumption; save vital war metals. Use Ryertex for: Jordans, Beaters, Press and Couch Rolls, Grinders, Calenders, etc.

JOSEPH T. RYERSON & SON, INC.

CHICAGO • MILWAUKEE • ST. LOUIS • DETROIT • CLEVELAND • BUFFALO
BOSTON • CINCINNATI • PHILADELPHIA • JERSEY CITY

scribed, in which it was shown that resin retention and wet strength increase as the pulp is beaten or refined to a greater extent, and that the fine fiber fractions apparently pick up a greater proportion by weight of resin than do the coarse fractions. It might be noted, however, that the latter effect may be caused not only by increased fiber surface but also by other factors, such as resin flocculation and resultant mechanical entanglement with the small fiber particles.

Another interesting property of the melamine resin colloid is its effect on the sizing properties of rosin and wax sizes. Maxwell has mentioned the improved sizing obtained by incorporation of the resin colloid in sized papers (*Paper Trade J.* 116, No. 19: 39-42, May 13, 1943); (*Tech. Assoc. Papers* 26: 309-312, June, 1943); (*Pacific Pulp Paper Ind.* 17, No. 4: 6-8, April, 1943), and laboratory studies have indicated that the size "fixing" properties of this versatile material are somewhat similar to those of alum. Further investigation of this phenomenon should prove beneficial.

In view of the complex natures of both cellulose and synthetic resins, it is not surprising that there are many gaps in our understanding of the mechanism of producing wet strength paper from these two materials. Nevertheless, these gaps are being narrowed, and it is believed that continuing study by all concerned will result in the production of better and more

(Turn to page 1274)

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC. REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933.

Of The Paper Industry and Paper World, published monthly at Chicago, Illinois, for October 1, 1945.

State of Illinois, County of Cook, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared A. Scott Dowd, who, having been duly sworn according to law, deposes and says that he is the business manager of THE PAPER INDUSTRY AND PAPER WORLD and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit.:

1. That the names and addresses of the publisher, editors, and business managers, are: Publisher, Fritz Publications, Inc., 59 East Van Buren Street, Chicago, Ill.; Editor, Besse Merrithew, 59 East Van Buren Street, Chicago, Ill.; Editorial Director, Harry E. Weston, 59 East Van Buren Street Chicago, Ill.; Business Manager, A. Scott Dowd, 59 East Van Buren Street, Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual members must be given.) Fritz Publications, Inc., 59 East Van Buren Street, Chicago, Ill.; Mrs. Annie C. L. Fritz, 6801 South Crandon Avenue, Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also, that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mail or otherwise, to paid subscribers during the twelve months preceding the date shown above is

(This information is required from daily publications only.)

A. SCOTT DOWD
(Signature of business manager.)

Sworn to and subscribed before me this 4th day of October, 1945.

[SEAL] THOMAS H. STEVENS, Notary Public

(My commission expires June 24, 1947.)

NEW EQUIPMENT AND SUPPLIES

Steel Pipe Electroplated on Inside With Corrosion-Resistant Metals

Bart Manufacturing Co., Inc., 227 Main Street, Belleville, N. J., has announced a process, the *Bart Lectro-Clad Process*, for the electroplating of steel pipe on the inside. Nickel or other metals can be utilized; and the process can be applied to pipe or tubing up to 18 in. over-all diameter and in lengths up to approximately 20 feet. This internally-plated pipe can be welded, reduced and bent, hot or cold, without destroying any portion of the internal lining.

Fittings and pipe line accessories also are available for complete piping systems.

Moisture Tester for Curved, Rough or Flat Surfaces

Moisture Register Company, 133 North Garfield Ave., Alhambra, California, has announced Model K-2 as a moisture tester for testing paper in stacks or rolls of varying diameter, rough lumber, and other materials having curved or irregular surfaces.

The instument, operating on the principle of power absorption from a high-frequency oscillator circuit, incorporates an

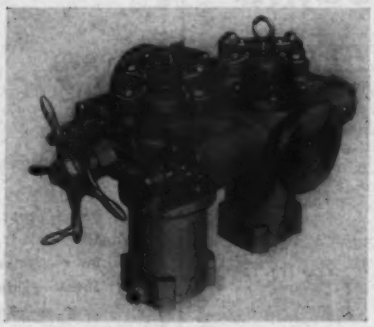
electrode equipped with buttons individually spring-cushioned to allow every button to maintain contact regardless of the contuor of the material tested. It is portable, weighs only five pounds, and is supplied with carrying case.

According to the manufacturer, accurate moisture checks can be made with the instrument in three seconds or less; and that low moisture percentages, actually down to zero per cent, can be determined with it.

Pipe-Line Strainer

A duplex vertical chamber disc type pipe-line strainer, designed to assure continuous flow in pipe lines and operated by a large handwheel that reverses valves simultaneously, has been announced by J. A. Zurn Mfg. Co., Erie, Pennsylvania. The strainer basket is positioned eccentrically with respect to basket chamber. Removable covers provide access to the basket chamber and permit complete cleaning. Handholes above each valve assembly permits servicing of the valves without removing the strainer.

The unit is made in cast bronze, steel, semi-steel, and cast iron; the basket, of perforated brass, Monel, or other specified metals.



According to the manufacturer, the flow section of the strainer is proportional to the flow needs at all points, thus minimizing pressure drop—also capacity flow is assured at all positions of the handwheel.

New Centrifugal Pump Line

Yeomans Brothers Company, 1433 N. Dayton St., Chicago 22, Ill., has announced an improved and augmented line of its Type "SHB" horizontal centrifugal pump. The present line, totaling 13 units, is available in capacities from 125 to 1000 gpm and for heads to 250 ft.

Suction and discharge connections range upward to six inches. Speed range from 1450 to 3500 rpm.

Each pump is equipped with both a heavy-duty ball thrust bearing and a self-lubricating sleeve bearing. Pump also may be equipped with bronze impeller or all-bronze water end construction where such construction is needed.

Designed as circulating and booster pumps, the pumps will handle water at high temperature, as well as many acids and alkalies.

Labyrinth Steam Platens

Lukens Steel Company, Coatesville, Pa., has announced the development of a labyrinth design of steam platen. In fabricating such a platen, a rolled steel center plate is flame-cut to any labyrinth design (depending upon service requirements), then this plate is tack-welded to a bottom plate to position the fingers forming the labyrinth, and finally a third plate is placed on top to facilitate handling during subsequent processing. This pack is heated to welding temperature and then passed through a rolling mill, thus becoming one thoroughly bonded homogeneous plate which may be treated as a solid plate of steel.

Figure 1 illustrates the application of two platens which were butt welded to form a drying or cooling drum, in which the medium enters and leaves the platen

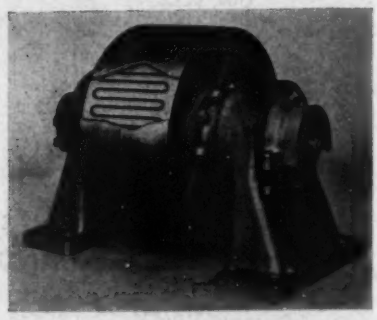


Figure 1

forming the rim by means of the hollow supporting shaft and four hollow spokes. This drum before machining measured 4 ft. 7½ inches in over-all length including hub, by 2 ft. 6 inches O. D. with a 2 ft. 4 inch face.

Figure 2 illustrates the application of a multi-labyrinth design in which several individual platens are ganged to single inlet

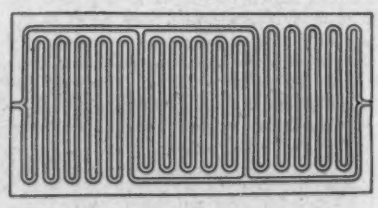


Figure 2

and outlet ports. This type of labyrinth is applicable particularly to long platens requiring uniformity in temperatures over the entire surface.

While in this design of platen, the minimun thickness is considered as 1 in., the length, width, and maximun thicknesses are limited only by the capacity of the plate mill — which produces plates up to 195 in. wide or up to 25 in. thick.

Asbestos Gaskets, Sheet Packing and Gasket Tape

Greene, Tweed & Co., 238th St. and Bronx Blvd., New York 66, N. Y., has announced the expansion of its line of Palmetto Packings to include High-Pressure Folded Asbestos Gaskets, Asbestos Metallic Sheet Packing, and Asbestos Metallic Gasket Tape. These several products are made from a strong cloth woven from brass wire inserted asbestos yarn.

In the case of the gaskets, the cloth,

A new, exciting paper of highest quality for those who want the best —to use, to print, to sell.

ECUSTA

Fine Flax Paper

Here is a multi-purpose paper suitable for letterpress, offset or gravure reproduction. Use it for:

BUSINESS STATIONERY
AIR MAIL STATIONERY
BIBLE PAPER
MAKEREADY TISSUE

Send today for swatch books

ECUSTA PAPER CORPORATION
PISGAH FOREST · NORTH CAROLINA

TRIMBEY MACHINE WORKS

GLENS FALLS N.Y.

PULP SCREENS
WEIGHT AND CONSISTENCY REGULATORS
METERING SYSTEMS FLOAT VALVES

CHEMIPULP PROCESS INC.

CHEMICAL PULP MILL ENGINEERS

500 Woolworth Building, Watertown, N. Y.
3311 First Avenue South, Seattle, Wash.
Associated with CHEMIPULP PROCESS LIMITED, Montreal, Que.

Use This MODERN Stuffing Box

The Johnson Rotary Pressure Joint

Hundreds of paper mills have endorsed it. Write for details.

Product of The Johnson Corporation
845 Wood St., Three Rivers, Mich.

- Self Oiling
- Completely Packless
- Self Adjusting
- Absorbs lateral and angular misalignment
- Lengthens life of syphon drainage pipe.

ORDER NOW! NEW EDITION FOR 1946!

The Paper Makers' Directory of All Nations

The Red Book of the British Paper Industry
Alphabetically arranged—Printed in Clear Type
Demy octavo—Cloth bound.
Price 25/—net, or Post Free 27/—Sterling.

Office of the Directory
30 Bedford Street, Strand London, W. C. 2, England

HONAN-CRANE MEN Are Trained Oil Purification Engineers

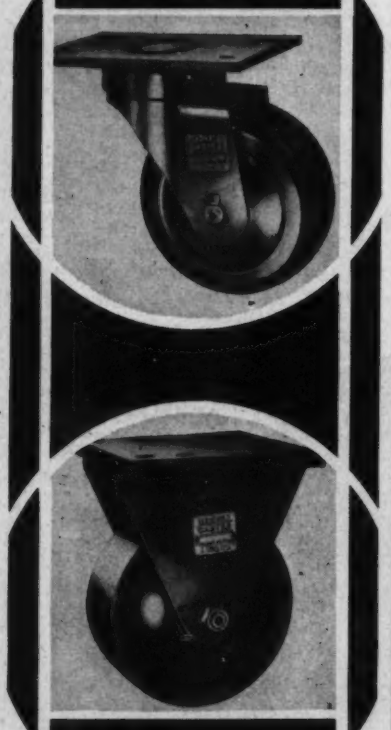
Honan-Crane oil purification equipment is sold ONLY by trained Oil Purification Engineers—skilled technicians capable of making an intelligent analysis of any problem involving dirty or contaminated oil. These men are also capable of supervising proper installation of Honan-Crane equipment to give you maximum oil purification protection against acids, sludges, abrasives or other damaging contamination.

Keeping oil clean pays big dividends in reduced maintenance and increased production in the operation of Turbines, Internal Combustion Engines, Hydraulics, Machine Tools, Compressors and other industrial equipment. Put this Honan-Crane Oil Purification Engineer to work on your problem—he will be one of the most important men in your plant. A Honan-Crane Engineer will call at your convenience. Write today.

HONAN-CRANE CORPORATION
Subsidiary of Houdaille-Hershey Corporation
810 Indianapolis Avenue
LEBANON, INDIANA

Honan-Crane has had many years of experience in the engineering and building of oil purification equipment.

...Let us demonstrate how Darnell Casters and E-Z Roll Wheels will save money and increase efficiency



DARNELL CASTERS

DARNELL CORP LTD
LONG BEACH 4 CALIFORNIA
60 WALKER ST NEW YORK 13 N Y
36 N CLINTON CHICAGO 6 ILL

coated and cemented with a heat-resisting compound, is folded and pressed into shape. Each gasket is hand-blocked to size, the seam being on the outside away from the pressure.

Both the sheet packing and the gasket tape are also supplied with a heat-resisting coating.

Self-Contained Smith's Forge

Mahr Manufacturing Co., Division of Diamond Iron Works, Inc., Minneapolis 11, Minnesota, has announced a self-contained smith's forge, which after plugging into an ac 220 X or 440 V circuit is ready to light and use. Combined within the unit are a fuel (oil) supply tank,

pump, motor, blower, burner, and combustion chamber.

The following claims are made by the manufacturer: all of the heat is concentrated at the table work opening—bar stock, angles, pieces, etc., are heated to forging heat very quickly, and can easily be heated on the end, center, or as the smith desires.

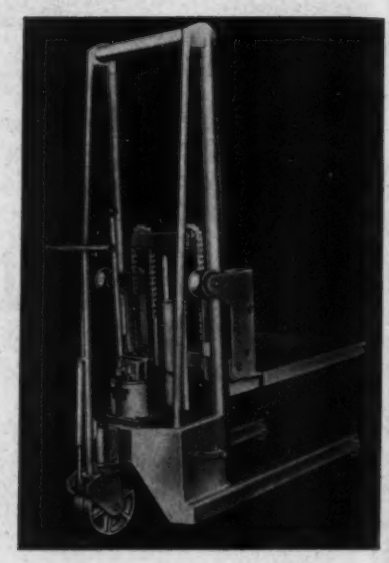
Glue for Palletizing

National Adhesives, Division of National Starch Products, Inc., 270 Madison Ave., New York 16, N. Y., has announced a glue for palletizing corrugated or solid fiber shipping containers or wooden boxes. Designed as *Pallet Adhesive No. 4*, the glue sets rapidly and dries to a moldproof, moisture-resistant film.

The application of glue to this form of loading was developed by the Army Quartermaster Corps and Materials Handling Section, Bureau of Supplies and Accounts of the Navy Department in collaboration with National Adhesives.

Hydraulic Lift Truck

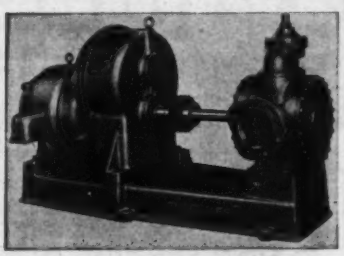
Lyon-Raymond Corporation, 2421 Madison St., Greene, N. Y., has announced a 2,000-lb. capacity hydraulic high-lift truck. Of welded tubular and formed plate construction, the standard model has a platform 30 in. wide by 36 in. long and an elevating range from 6 in. to 60 in. above floor. Movement is provided by Timken-equipped 10 in. diameter front and 5 in. diameter rear wheels. A foot-operated floor lock, making two-point con-



tact with the floor, holds truck in position when desired. A two-speed hydraulic hand pump also is standard equipment, but a motor-driven hydraulic pump may be furnished.

Steam-Jacketed Rotary Pump

A steam-jacketed rotary pumping unit, designed for handling sludges and viscous liquids, has been announced by the Blackmer Pump Company, Grand Rapids, Michigan. The pump has a capacity of 500 gpm at 150 psi pressure and is powered by a 75 hp. gearhead motor with a speed of



155 rpm on the drive shaft. Pump construction is iron, bronze-fitted, and the entire unit is mounted on a cast-iron base. A steam jacket, suitable for pressures up to 125 psi, is located on each head.

Units in capacities of 50, 90, and 200 gpm, with a gearhead motor or reduction gear drive are also available with steam-jacketed heads of this construction.

◆

Melamine Resin . . .

(Continued from page 1271)

useful papers, and thus contribute to the broadening of markets for paper.

Acknowledgment—The authors wish to acknowledge the contributions and assistance of Drs. D. J. Salley and J. K. Dixon, and Messrs. W. F. Reynolds, A. F. Blockman, C. A. Davis, R. W. Kumler, H. B. Freeman, and many others. Permission of the American Cyanamid Company to publish this material is greatly appreciated.

In a mill producing facial or other tissues calling for gentle handling of the web, which winders or rewinders give the best service?

CAMACHINES OF COURSE !!!

CAMERON MACHINE COMPANY 61 POPLAR ST., BROOKLYN 2, N. Y.

MIDWEST OFFICE: 111 W. MONROE ST., CHICAGO 3, ILL.

GEORGE F. HARDY

Consulting Engineer to the Paper Industry since 1900

441 Lexington Avenue, New York 17, N. Y.

Member—Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst. Can.

Consultation	Paper and Pulp Mills
Reports	Hydro-Electric and
Valuations	Steam Power Plants
Estimates	Plans and Specifications

CARTHAGE MACHINE CO.

• • •

CARTHAGE, NEW YORK

Machinery for Ground Wood and Chemical Pulp Mills.

P.M. 32 POWDER

Bactericide and Fungicide

ODORLESS—NON-CORROSIVE—SAFE

CONTROLS SLIME

Only ½ to 1 ounce of this powerful disinfectant per ton of stock, dry basis, is usually sufficient to control slime-forming micro-organisms in a pulp or paper system.

FALLS CHEMICAL PRODUCTS COMPANY

OCONTO FALLS, WISCONSIN

PHOTOVOLT

Photoelectric REFLECTION METER

For accurate measurement of

BRIGHTNESS
GLOSS
OPACITY
COLOR

of paper and paper products

Portable, rugged, simple to operate

Write for literature

PHOTOVOLT CORP.

95 Madison Ave. New York 16, N. Y.

New Catalogues and Publications

American Mutual Liability Insurance Company, Public Relations Division, 142 Berkeley Street, Boston 16, Mass.—A guide for emergency treatment of injured persons has been prepared by this company, entitled "Standing Orders for First-Aid Workers in Industry." The booklet covers the recognition and proper emergency treatment of a wide variety of industrial injuries. Discussions of supplies, records, physical arrangements of first-aid rooms, transportation of injured persons and emergency procedures in industry are included. Copies are available on request.

Askania Regulator Company, 1603 South Michigan Avenue, Chicago 16, Ill.—In Bulletin No. 126 issued by this company, the advantages of their crank type cylinders are listed. The circular includes tables showing performance data, cylinder performance under varying load conditions and diagrams of cylinder dimensions.

Bailey Meter Company, 1050 Ivanhoe Road, Cleveland 10, Ohio—Just issued is an eight-page bulletin, No. 83-C, entitled "Bailey Thermo-Hydraulic Feed Water Regulators." In it are described and illustrated improved designs of thermo-hydraulic generators and bellows operated feed water regulator valves, suitable for feed lines ranging in size from ¾" to 6" inclusive. A full page colored schematic illustration is used to demonstrate the thermo-hydraulic principle, which is entirely self-contained, requiring no outside source of power. Also available is Bulletin No. 62, which features Bailey open channel meters for sewage industrial wastes, sludge and irrigation water. The meters described in the booklet are of both direct mechanical and electronic tachometer type. A wide selection of registers with various combinations of indicating, recording and integrating features is illustrated. The booklet also shows alternate methods for mounting registers on wall, panel and pedestal.

Chain Belt Company, 1600 W. Bruce Street, Milwauke 4, Wis.—In a new eight-page booklet, No. 479, now being distributed by this company, is a description of Rex Mechanically Cleaned Bar Screens. An explanation of the machine and its operation, as well as a presentation of its exclusive features, is combined with typical job photographs and application drawings. A section of the brochure describes the Rex Trirutator as used in connection with the bar screen. Data tables and specifications are also included

Dow Corning Corporation, P. O. Box 592, Midland, Mich.—A new catalogue listing all of the Dow Corning silicone products is now available, containing many charts and graphs demonstrating the unusual properties of this rapidly increasing family of organo-silicon-oxide polymers. Many industrial uses for these heat stable, waterproof materials are presented. Inquiries may be sent to O. D. Blessing, Sales Manager, Dow Corning Corporation, Midland, Mich.

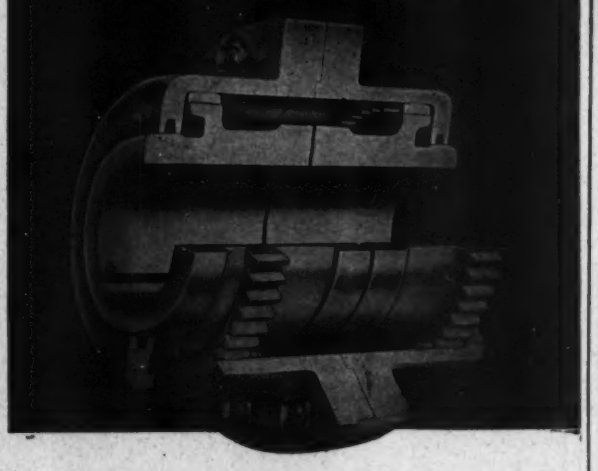
The Elwell-Parker Electric Company, Cleveland, Ohio—A simple, effective method for handling materials and manufactured products economically and safely is outlined in "Industrial Logistics," a 12-page illustrated booklet issued by the above company, with a sub-title of "A Survey for Management." It explains how a planned system of material transportation reduces costs in procurement, production and distribution of goods. Auxiliary booklets entitled "Logistics of Boxes," "Logistics of Barrels," "Logistics of Bags," and "Logistics of Bales," have also been prepared. Copies may be obtained by addressing the Elwell-Parker Electric Company, Cleveland, Ohio, or its field representatives.

The Imperial Brass Mfg. Company, 1200 West Harrison, Chicago 7, Ill.—A new folder published by this company, includes a handy tube-working tool selector, for using tools with copper, brass, aluminum, thin-wall steel and similar tubing. Handy tool kits are also illustrated. Copies of this folder, No. 347, may be obtained by writing to the above address.

National Association of Manufacturers, 14 W. 49th Street, New York 20, N. Y.—A booklet just issued by this association, "Patents and Your Tomorrow," will be of general interest, giving a glimpse into the new world which will be brought to us as a result of new inventions. It also includes a comprehensive quiz on patents, answering questions on the various aspects and accomplishments of the system. Definitions are given of such terms as cross-licensing, restrictive licensing, cartels, compulsory licensing and exchange of patents.

National Machine Tool Builders' Association, Cleveland, O.—Just published by this association is an illustrated booklet explaining historical relation between jobs, machines and prices. The booklet cites specific examples of how modern tools contributed to high level employment in service industries as well as in manufacturing. It points out that the industrial history of this country is, to a large extent, the appli-

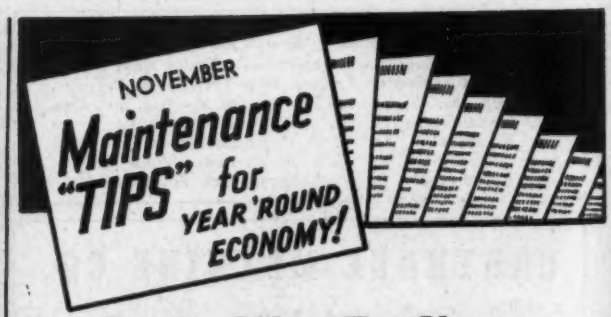
POOLE



A COPY OF CATALOG GIVING FULL DESCRIPTION AND ENGINEERING DATA SENT UPON REQUEST.

FLEXIBLE COUPLINGS

POOLE FOUNDRY & MACHINE COMPANY WOODBERRY, BALTIMORE, MD.



Easier Way To Clean Your Screen Plates

Slime, dirt and similar foreign matter if allowed to congregate, can seriously interfere with screen plate operation. A regular maintenance cleaning schedule is rewarded by more profitable production.

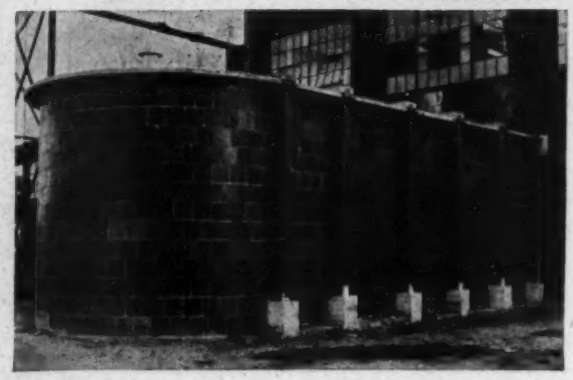
To speed up your maintenance cleaning procedure put it on a low-cost, efficient basis, we suggest that you investigate the Oakite technique employing the Oakite-Solution Discharging Steam Gun. Widely-accepted by many leading paper mills, this Oakite mechanized method provides the utmost in detergent action through a balanced combination of controllable heat and force. Your inquiries for instructive literature or demonstration will receive prompt, comprehensive action. Write TODAY!

OAKITE PRODUCTS, INC., 16 Thames St., NEW YORK 6, N. Y.

Technical Service Representatives in All Principal Cities of the United States and Canada

OAKITE Specialized CLEANING

You Paper Mill Men • *take a Tip on Kalamazoo Tile Stock Tanks and Chests* • *you can't beat them for* **STRENGTH** *and* **DURABILITY** •



Kalamazoo Vitrified Glazed Tile

is a "Natural" for Paper Mill needs

Smooth, hard, strong, easily cleaned and highly resistant to chemical action, this marvelous vitrified glazed tile type of construction is preferred by scores of leading paper mill executives and engineers. Adaptable for stock tanks and chests of all kinds. Costs no more than concrete tanks that require constant maintenance expense. . . . An exclusive method of glazed tile tank construction developed by Kalamazoo engineers. It provides greater flexibility and lower cost for all paper mill stock handling problems. Immediately available.

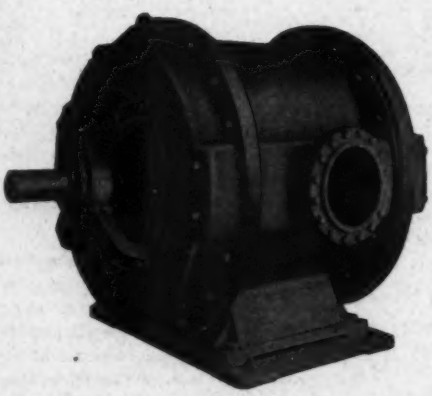
● **Any Size or Shape Desired—**

Wide, narrow—shallow or deep. Round, rectangular or square. Half-round or tapered bottom and corners. Mid-feathers and fins where needed to control stock flow. Adaptable to pumps or agitators. Construction individually designed to meet space, tonnage or production requirements.

Ask for engineering data.

Kalamazoo TANK & SILO CO
KALAMAZOO · MICHIGAN

ONLY NASH VACUUM PUMPS HAVE ALL THESE FEATURES



One Moving Element. Non-pulsating Vacuum. No Internal Wearing Parts. No Internal Lubrication. Handles Liquid With Air. No Expert Attendance. Constant Efficiency. Low Maintenance Cost.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

ROGERS "NT"

UNEXCELLED for Precision GRINDING of PAPER CUTTER, RAG and CHIPPER KNIVES

This heavy-duty knife grinder (shown as installed in one of America's largest paper mills) has automatic oiling system, extra-wide "V" ways and Rogers quality construction. 5 Sizes: from 48" to 134". Send for circular.

SAMUEL C. ROGERS & COMPANY
165 Dutton Ave. **Buffalo 11, N. Y.**

ROGERS KNIFE GRINDERS
PRECISION QUALITY SINCE 1887

cation of manufacturers of machines to cut costs, and consequently prices, to where people can buy their products. Copies will be sent on request.

Oliver United Filters, Inc., 33 West 42nd Street, New York 18, N. Y.—A new bulletin, No. 214, is used by this company to describe its "Filters for the Process Industries, Continuous Vacuum, Continuous Pressure and Batch Pressure," also acid handling and slurry pumps. A table giving operation, filter type, distinctive features and general applications will be found helpful.

Pittsburgh Plate Glass Company, Color Engineering Department, 632 Duquesne Way, Pittsburgh 22, Pa.—In a series of four-color booklets which may be obtained from the Color Engineering Department of this company, is included a 24-page, fully illustrated booklet, "Color Dynamics in Industry." It includes four pages in color illustrating the progressive steps in transforming a dismal factory building into a morale building efficient working area. Another booklet, "Color Dynamics for Offices, Hotels, Clubs and Restaurants," is also helpful.

Books

Ball and Roller Bearing Engineering—A 270-page book containing some 200 drawings and tables, this volume published by SKF Industries, Inc., Philadelphia, Pa., is the translation of a work by Arvid Palmgren, Dr. Eng. The translation was made by Gunnar Palmgren and Bryce Ruley.

The book opens with descriptive material on various bearing types and continues through the following chapters on fundamental engineering studies: Forces and Motions in Bearings, The Carrying Capacity of Ball and Roller Bearings, Bearing selection, Design of Bearing Applications, Mounting and Dismounting, Lubrication and Maintenance, and Bearing Failures. The book is concluded with a chapter made up of tables, conversion values and description of symbols and abbreviations.

First copies of the book will be sent by SKF to leading corporations, technical schools and colleges and libraries in principal U. S. cities. Later editions will be sold at cost by the company for students and others interested in bearing studies.

Behold Our Green Mansions—Written by Richard H. D. Boerker, who served with the U. S. Forest Service as far back as 1910, this book broadly treats of forest restoration, soil conservation, flood control, wild life, grazing, recreation, preservation and use. It is a book of more than 300 pages, nicely illustrated with photographs and maps.

In the words of the author, "the principle of conservation is the guiding theme of this book—but since the word 'conservation' has been so misunderstood and misused that it has taken on a certain ill repute, it has been discarded in favor of more up-to-date terms that will run no danger of being misinterpreted. Our whole emphasis will be on **forest restoration for multiple use** with human welfare as the ultimate object. We must stop forestfires and keep America green—but we must also utilize our forests for the maximum benefit to ourselves and to those who come after us."

The book is priced at $4.00 a copy; the publisher, The University of North Carolina Press, Chapel Hill, N. C.

Handbook of Industrial Safety Standards—This publication, a revised edition, is a compilation of generally recognized industrial safety requirements. Consisting of 34 chapters and totaling more than 200 pages, the book is available in paper cover for 75 cents a copy or in the cloth Fabrikoid binding for $1.00. Among the subjects treated in the volume as indicated by the chapter headings, are the following: Safety Program for Industrial Plants, Illumination, Handling and Transportation of Materials, Steam Boilers, Engines and Turbines, Identification of Piping, Electric Equipment, Mechanical Power Transmission Equipment and Machinery, and Paper and Printing Machines.

The publisher is the National Conservation Bureau, 60 John Street, New York, New York.

Principles of Industrial Process Control—Written by Donald P. Eckman, The Brown Instrument Company, Division of Minneapolis-Honeywell Regulator Company, this book is intended both for the student in chemical, metallurgical, mechanical, or electrical engineering, and for the industrial user of automatic control equipment. Its purpose has been to treat, in a logical manner, the important laws of operation of industrial automatic control systems and to provide a practical background of theory.

The subjects treated in the book follow: The Art and Science of Control, Measuring Means of Industrial Controllers, Characteristics of Measuring Means, Modes of Automatic Control, Final Control Elements, Process Characteristics, Theory of Automatic Control, Quality of Automatic Control, Application Control Engineering, Automatic Control Systems, and Maintenance of Exact Control.

The book also includes an extensive glossary of terms used in automatic control.

Totaling about 250 pages, the book, priced at $3.50 a copy, is published by John Wiley & Sons, Inc., 440 4th Avenue, New York 16, New York.

Help your workers to work SAFELY!

Your chief concern about accidents in your company is the suffering they cause your employees and their families.

It's hard to say just how many accidents your company will avoid as the result of a systematized safety effort. This much is certain, however: if you apply the accident-prevention materials and services of the National Safety Council, there will be no question about your saving some of your employees and their families (and your company as well) a lot of grief, unhappiness and misfortune.

Your good safety efforts help protect your workers and your company against working hazards. Thousands of industrial organizations have reduced their accidents 30% to 40% through the adoption of the prescribed, time-tested, result-getting ACCIDENT PREVENTION SERVICE offered by the National Safety Council. A sound Safety Program is a valuable investment for your company . . . invest in Safety NOW!

For Further Information Write:

NATIONAL SAFETY COUNCIL

20 N. Wacker Drive Chicago 6, Illinois

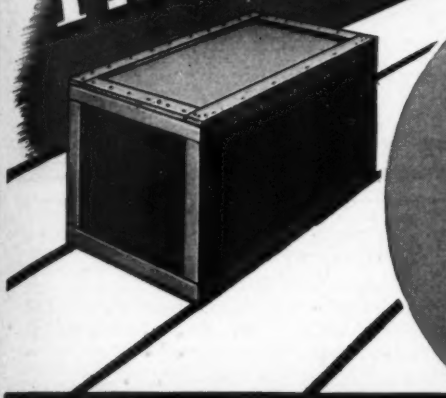
PAPER and PULP SECTION

To make Council Membership of maximum service, safety administrators of member companies are enrolled in the Industrial Section where their chief interests lie. Safety directors whose companies are engaged in similar operations thus pool their knowledge and experience.

Sectional news letters afford a medium for presenting and exchanging information on specific industrial safety problems and ideas on specific hazards. Section members also cooperate in preparing Safe Practices Pamphlets, Data Sheets, Instruction Cards, etc. The Paper and Pulp Section is extremely active in all Council activities.

UNIVERSAL SAFETY

HOW TO PACKAGE A *Masterpiece*



Inside this box is an Orr felt, clean and flawless. It's no ordinary box for it is free from splinters . . . it is strong . . . and it is so constructed that no protruding nails can damage the valuable contents.

At Orr we take great pride in the "little things" such as correct packaging, storing, mothproofing, etc. And we feel that our interest in Orr felts rightly extends into your own mill.

That's why we have instructed our representatives to be of the greatest possible service to you. The next time one calls, allow him to examine your felt handling methods and make any suggestions.

ORR FELTS

THE ORR FELT & BLANKET CO.
PIQUA, OHIO

PROTECT THOSE VITAL
Rolls and Screen Plates
WITH ELECTRO-COATINGS'
CHROMIUM PLATE

Extend their life many times . . . Maintain highest quality production

WRITE, WIRE OR TELEPHONE *for Prompt Service*

ELECTRO-COATINGS, INC. offers COMPLETE FACILITIES, CONVENIENT LOCATIONS, EXPERIENCED PERSONNEL

ELECTRO-COATINGS, INC.
2380 BLUE ISLAND AVENUE
CHICAGO 8, ILL.
PLANTS AT CHICAGO · MOLINE · MILWAUKEE

INSTALL HEATING EQUIPMENT *NOW* THAT WILL LAST FOR YEARS

GRID UNIT HEATERS *here's why*

- One piece construction heating sections (patented) of high test cast iron that will withstand steam pressures up to 250 lbs.
- No soldered, brazed, welded or expanded connections to become loose or develop leaks.
- No electrolysis to cause corrosion, breakdowns, leaks or heating failures.

It's the material that makes a difference in GRID Unit Heaters. That's why they are free from maintenance expense. Many units in operation 15 years without any maintenance. Capacity tables upon request.

HIGH TEST **CAST IRON** HEATING SECTIONS

Send now for new booklet "Corrosion in Unit Heaters"—free upon request.

D. J. MURRAY MANUFACTURING CO.
WAUSAU • WISCONSIN

BLACKMER ROTARY PUMPS are COST CUTTERS

HAND PUMPS and POWER PUMPS are SELF-ADJUSTING FOR WEAR

"Bucket Design" swinging vanes automatically compensate for wear. When the "buckets" finally wear out, a simple replacement job restores the pump to normal capacity.

THIS MEANS LOWER PUMPING COSTS FOR PAPER MILLS

Write for Bulletin No. 307—Facts About Rotary Pumps.

BLACKMER PUMP COMPANY
2130 Century Avenue — Grand Rapids 9, Michigan

POWER PUMPS • HAND PUMPS • EZY-KLEEN STRAINERS

PULP AND PAPER ENGINEER

Many years research development and practical operating experience in the Pulp and Paper Industry.

Have perfected method of reducing production cost and improving pulp quality.

Installation will pay for itself in short time.

Have been employed as Consulting Engineer by large company for period of years.

Looking for connection with concern which desires to increase profits.

Prefer medium size plant having Sulphate or Soda process.

Address Box 395, Fritz Publications, Inc.

WANTED FOR EXPORT

MULTI CYLINDER BOARD MACHINE

94" TO 110" TRIM

Complete with driers, 2 sets calenders, reel, duplex cutter, winder. Also a Yankee drier suitable with above machine and 6 mixing beaters, each 1000# of 6% stock and 1 large jordan. Give complete details.

Address Box 396, Fritz Publications, Inc.

WATERBURY FELTS

are made by

H. Waterbury & Sons Co.

Oriskany, New York

CONFIDENTIAL
EMPLOYMENT SERVICE
FOR PAPER AND PULP MILLS
WE INVITE CORRESPONDENCE (Confidential) WITH EMPLOYERS SEEKING EXECUTIVES AND EXECUTIVES SEEKING NEW POSITIONS,
CHARLES P. RAYMOND SERVICE, INC.
PAPER MILL DEPARTMENT
294 WASHINGTON STREET BOSTON 8, MASS.

WANTED—Tour Boss to be trained for job of Assistant Superintendent of Roofing Felt mill located in New Orleans. Send complete resume giving experience, etc. Address Box 397, Fritz Publications, Inc.

WANTED—Well known Indian firm solicits selling agency from reputed American manufacturers of papers, inks, machinery and stationery. Address Box 398, Fritz Publications, Inc.

VERMONT PULPWOOD—13,000 cords spruce and balsam and 8 million feet saw timber. $70,000 cash. Easy trucking to several pulp and paper mills. Willis E. Waterman, 465 Potomac Avenue, Buffalo 13, N. Y.

ARE YOU LOOKING for a capable young man? Here is one with a Chemical Engineer degree; has worked mostly as Mechanical Engineer and Industrial Engineer and some as supervisor. Desires occupation in paper industry. Have tremendous ambition and energy; can invest capital. Why don't you invest in a letter for further information. Age 29; New York area. Address Box 399, Fritz Publications, Inc.

WANTED—Salesman for upper and central New York territories by large chemical manufacturing company. Excellent opportunity for a man located in that vicinity with knowledge of paper industry. Chemical background desirable, miscellaneous chemicals also handled. Write fully giving experience and details. Address Box 400, Fritz Publications, Inc.

WANTED—Electric variable speed drive, as follows: single, driving DC Motor, 200 HP, 230 volts. Variable voltage DC generator, 200 KW, 230 volts. Synchronous motor 300 HP, 550 volts, 3 phase, 60 cycles, with full automatic starter. Necessary DC voltage regulator and speed control devices to give a speed variation of 6 to 1 ratio. Motor driven exciter for the above. Address Box 401, Fritz Publications, Inc.

WANTED—Master Mechanic to take charge of maintenance in tissue mill. Experience in steam problems and general mill equipment preferred. Plant in northern New York. Address Box 402, Fritz Publications, Inc.

Index to Advertisers

When writing them, please mention The Paper Industry and Paper World

Refer to the Paper and Pulp Mill Catalogue and Engineering Handbook at your mill office, for complete listing of all advertisers' products.

Acme Coppersmithing & Machine Co. 1271
Allis-Chalmers Mfg. Co. 1140-1141
American Car & Foundry Co. 1200
American Chain & Cable Co. 1156
American Cyanamid & Chemical Corp.
American Lumber & Treating Co. 1136
American Paper Machinery & Engr. Works, Inc.
American Resinous Chemicals Corp. 1154
Appleton Machine Co., The 1164
Appleton Wire Works, Inc.
Appleton Woolen Mills 1237
Armour and Company
Armstrong Machine Works 1150
Asten-Hill Mfg. Co.
Atkins and Company, E. C. 1269
Aurand Mfg. & Equipment Co.
Aurora Pump Company 1268
Automatic Transportation Co. 1165

Bagley & Sewall Co., The
Bailey Meter Company 1145
Baldwin-Duckworth Div. of Chain Belt Company 1199
Bauer Bros. Co., The 1144
Becco Sales Corporation
Beloit Iron Works 1123
Binney & Smith Co. 1231
Bird Machine Company 1201
Bird-White Company 1261
Black-Clawson Co., The 1197
Blackmer Pump Company 1280
Boston Woven Hose & Rubber Co.
Bowser, Incorporated
Bowsher Co., The N. P. 1269
Brown Instrument Co., The
Buffalo Forge Company
Buffalo Pumps, Inc. 1134

Calco Chemical Division, American Cyanamid Company
Cambridge Instrument Co.
Cameron Machine Co. 1275
Carthage Machine Co. 1275
Cash Company, A. W.
Chain Belt Company 1199
Chemical Industries, Exposition of. 1261
Chemipulp Process, Inc. 1273
Chicago Bridge & Iron Co. 1139
Chicago Electric Company 1254
Chromium Corp. of America
Clark Tructractor Division of Clark Equipment Company 1179
Classified Advertising 1280
Clayton Manufacturing Co. 1174
Cleveland Tramrail Div., The Cleveland Crane & Engineering Co. 1239
Cochrane Corporation
Columbia Chemical Division 1133
Columbian Carbon Company 1231
Cooper Alloy Foundry Co., The 1143
Corning Glass Works 1245
Crane Co. 1187

Darnell Corporation, Ltd. 1274
De Laval Steam Turbine Co. 1241
DeZurik Shower Company
Diamond Alkali Company 1163
Dilts Machine Works 1197
Dodge Manufacturing Corporation
Dow Chemical Co., The 1235
Downingtown Mfg. Co. 1st Cover
Draper Brothers Company 1223
Dresser Industries, Inc.
du Pont de Nemours & Co., E. I.
Duriron Co., Inc., The
Eastern Stainless Steel Corp.
Eastwood-Nealley Corporation 1252
Ecusta Paper Corporation 1273
Electric Machinery Mfg. Co. 1135
Electro-Coatings, Inc. 1279
Elwell-Parker Electric Co., The 1128

English China Clays Sales Corp. 1264
Enterprise Engine & Foundry Co.

Fairbanks Company, The
Fairbanks, Morse & Co.
Falk Corporation, The 1158-1159
Falls Chemical Products Co. 1275
Ferguson & Co., Hardy S. 1265
Fitchburg Screen Plate Co., Inc.
Fleishel Lumber Company
Flexible Steel Lacing Co.
Fiori Pipe Company 1161
Foxboro Company, The 1188
Fritz Publications, Inc. 1261, 1282
Fuller Brush Company, The 1188

Garlock Packing Co., The 1184
Gates Rubber Company 1227
General American Transportation Corporation 1146-1147
General Chemical Company 1181
General Coal Co. 1244
General Electric Company 1166-1167
Glidden Company, The 1148
Goslin-Birmingham Mfg. Co., Inc. 1185
Goulds Pumps, Inc. 1194
Groch Engineering Co.
Gruendler Crusher & Pulverizer Co. 1252

Hanchett Manufacturing Co. 1231
Hardy, George F. 1275
Harper Company, The H. M. 1136
Harrington & King Perforating Co. 1265
Harris-Seybold-Potter Co. 1175
Hermann Mfg. Co., The 1188
Hills-McCanna Company 1268
Honan-Crane Corporation 1273
Hooper & Sons Co., Wm. E. 1235
Hudson-Sharp Machine Company 1265
Hunt Machine Co., Rodney
Huyck & Sons, F. C.
Hyster Company

Improved Paper Machinery Corp.
Industrial Steels, Inc. 1177
Ingersoll-Rand Company 1138
Ingersoll Steel & Disc Div., Borg-Warner Corporation
International Nickel Co., Inc. 1132
International Wire Works 1270

Jeffrey Mfg. Co., The
Jenkins Bros.
Johnson Corporation, The 1273
Jones & Sons Company, E. D. 1183
Jones Foundry & Machine Co., W. A. 1263

Kalamazoo Tank & Silo Co. 1277
Kalamazoo Vegetable Parchment Co. 1265
Kelco Company 1221
Kewaunee Shipbuilding & Engr. Corp. 1124
Klemp Company, Wm. F. 1188
Kohler System Co., The 1255

Langston Co., Samuel M. 3rd Cover
Layne & Bowler, Inc. 1254
Lewellen Manufacturing Co. 1168
Lindsay Wire Weaving Co., The 1263
Link-Belt Company 1193
Lockport Felt Company
Lodding Engineering Corp.
Lunkenheimer Co., The 1246

Magnetic Pigment Division, Columbian Carbon Company
Magnus Chemical Co., Inc.
Marion Machine, Foundry & Supply Co. 1263
Mason-Neilan Regulator Co.
Mathieson Alkali Works, Inc. 1126
Michigan Steel Casting Co. 1253
Midwest Piping & Supply Co., Inc.
Monsanto Chemical Company 1142
Morris Machine Works 1230
Mt. Vernon-Woodberry Mills, Inc. 1186
Murray Mfg. Co., D. J. 1279

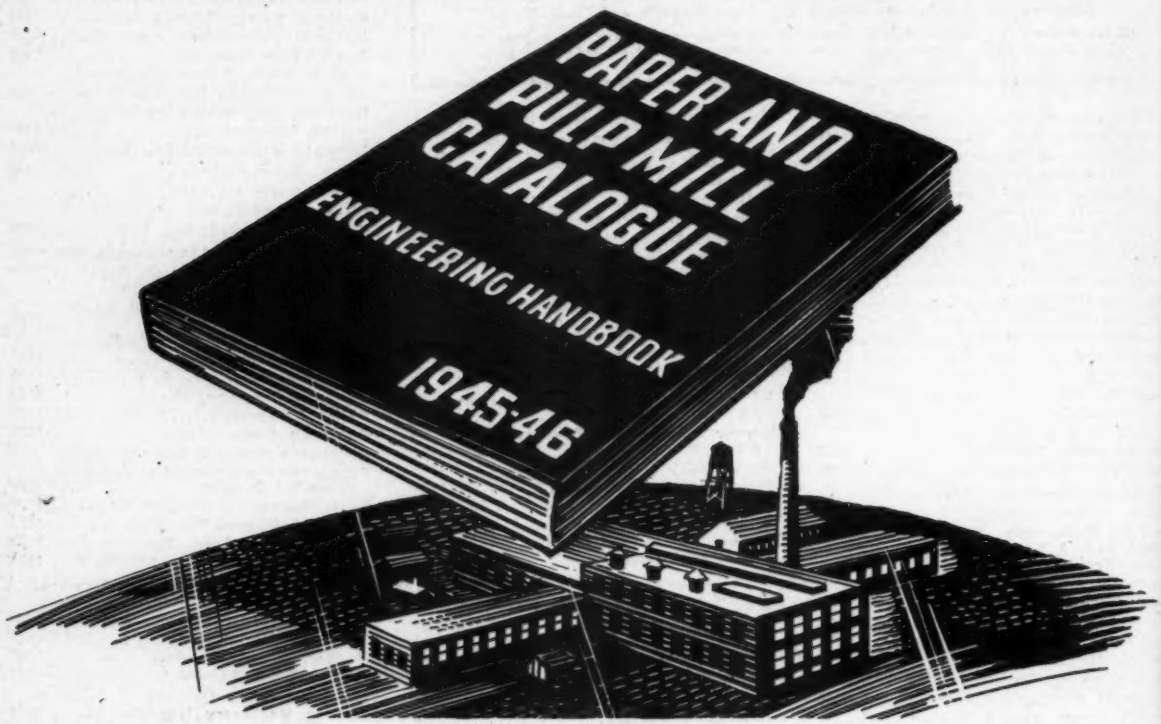
Nash Engineering Co., The 1277
National Oil Products Co. 1152
National Publishers Ass'n, Inc. 1162
National Research Bureau, Inc.
National Safety Council, Inc. 1278
National Tuberculosis Association 1270
Naylor Pipe Company 1250
Nichols Engr. & Research Corp.
Norma-Hoffmann Bearings Corp. 1251
Northern Engineering Works
Norton Company 1137
Norwood Engineering Co., The 1232

Oakite Products, Inc. 1276
Ohio Injector Co., The
Oliver United Filters, Inc.
Orr Felt & Blanket Co., The 1279

Paper & Industrial Appliances, Inc. 1195
Paper Makers Chemical Dept. of Hercules Powder Company
Paper Makers' Directory of All Nations 1273
Patterson Foundry & Mach. Co.
Peerless Pump Division 1144
Perkins & Sons, Inc., B. F. 1130
Permutit Company, The 1160
Philco Corporation 1125
Photovolt Corporation 1275
Pittsburgh Piping & Equipment Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division 1133
Poole Foundry & Machine Co. 1276
Powell Company, The Wm. 1233
Pusey & Jones Corp., The 1173
Raymond Service, Inc., Charles P. 1280
Reichhold Chemicals, Inc.
Reliance Electric & Engr. Co.
Research Corporation 1189
Rockwood Manufacturing Co. 2nd Cover
Rodgers Hydraulic, Inc. 1153
Rogers & Co., Samuel C. 1277
Rollway Bearing Co., Inc.
Roofing Machinery Mfg. Co. 1270
Roots-Connersville Blower Corp.
Ross Engineering Corp., J. O.
Ryerson & Son, Inc., Joseph T. 1202, 1271

Sandusky Foundry & Machine Co.
Sandy Hill Iron & Brass Works, The
Shartle Bros. Machine Co. 1197
Shuler & Benninghofen 1198
Smith & Winchester Mfg. Co. 1154
Solvay Sales Corporation
Spraying Systems Company
Standard Oil Co. (Indiana) 1151
Stebbins Engr. & Mfg. Co. 1256
Stein, Hall & Company, Inc. 1249
Stickle Steam Specialties Co. 1267
Sutherland Refiner Corporation 1131
Swenson Evaporator Company
Taylor Forge & Pipe Works
Texas Company, The 4th Cover
Thomas Flexible Coupling Co. 1229
Timken Roller Bearing Co., The 1129
Titanium Pigment Corporation 1194
Towmotor Corporation 1149
Trimbey Machine Works 1273
Turner Halsey Company 1186
U. S. A. Treasury Dept. 1196
Union Pacific Railroad Co.
United States Rubber Company
U. S. A., Treasury Dept. 1196
Valley Iron Works Company
Vanderbilt Co., Inc., R. T. 1190
Waldron Corporation, John 1169, 1243
Warren Steam Pump Co., Inc. 1257
Waterbury & Sons Co., H. 1280
Waterbury Felt Co., The 1270
Western Precipitation Corp.
Westinghouse Electric Corporation
Weyerhaeuser Timber Co.
Whiting Corporation
Wilkens-Anderson Company
Williams and Co., C. K. 1268
Williams-Gray Company
Worthington Pump & Machinery Corp. 1155
Wright Manufacturing Div., American Chain & Cable Co. 1156
Wyandotte Chemicals Corporation
Youngstown Welding & Engineering Company, The

Now available at your mill office . . .



ready to serve in the maintenance and operation of your mill. A larger CATALOGUE SECTION with detailed information about the products of the prominent manufacturers that supply the industry. The cross-indexed BUYERS SERVICE SECTION to help you locate sources of purchases for machinery, equipment, chemicals and supplies. The ENGINEERS HANDBOOK extended for your use through the addition of a number of charts and tables.

The PAPER AND PLUP MILL CATALOGUE has been edited and produced to serve you. Use it frequently—the more you refer to it, the more helpful it will be to you.

These firms describe their products in the 1945-46 edition—

Allington & Curtis Mfg. Co., The
Allis-Chalmers Mfg. Company
American Cyanamid & Chemical Corporation
American Defibrator, Inc.
American Paper Mach'y. & Engr. Works, Inc.
Appleton Machine Co., The
Armour & Company
Armstrong Machine Works
Atkins & Company, E. C.
Aurora Pump Co.
Automatic Transportation Company
Bagley & Sewall Company, The
Bauer Bros. Company, The
Beloit Iron Works
Benjamin Electric Mfg. Co.
Biggs Boiler Works Company, The
Bird Machine Company
Black-Clawson Co., The
Blaw-Knox Division (Blaw-Knox Company)
Blickman, Inc., S.
Bowser, Incorporated
Buffalo Forge Company
Buffalo Pumps, Inc.
Bufovak Equipment Division (Blaw-Knox Company)
Cameron Machine Company
Carthage Machine Company
Cash Company, A. W.
Chemipulp Process, Inc.
Chicago Bridge & Iron Company
Chicago Electric Company
Clark-Aiken Company, The
Control Equipment Corporation
Covel-Hanchett Company
DeZurik Shower Company
Dilts Machine Works
Dow Chemical Company, The
Downingtown Manufacturing Co.
Dresser Industries, Inc.
Durkon Company, Inc., The
English China Clays Sales Corporation
Falk Corporation, The
Farrel-Birmingham Company, Inc.
Fitchburg Screen Plate Company, Inc.
Fleishel Lumber Company
Foster Wheeler Corporation
Fuller Brush Company
Garlock Packing Company, The
General American Transportation Corporation
Glens Falls Machine Works, Inc.
Glidden Company, The
Golden-Anderson Valve Specialty Company
Goslin-Birmingham Manufacturing Co., Inc.
Graver Tank & Mfg. Co., Inc.
Gruendler Crusher & Pulverizer Co.
Harper Company, The H. M.,
Harris-Seybold-Potter Co.
Hauser-Stander Tank Co.
Hercules Powder Company, Inc.
Hermann Manufacturing Co., The
Hewitt Machine Company, Inc., J. W.
Hills-McCanna Co.
Holyoke Machine Company
Hooker Electrochemical Company
Improved Paper Machinery Corporation
Industrial Gear Mfg. Co.
Infilco Inc.
James Manufacturing Co., D. O.
Jeffrey Manufacturing Co., The
Johns-Manville
Johnson & Carlson
Johnson Corporation, The
Jones & Sons Company, E. D.
Jones Foundry & Machine Co., W. A.
Kalamazoo Tank & Silo Company
Kohler System Company, The
Lancaster Iron Works, Inc.
Langston Company, Samuel M.
Lawrence Machine & Pump Corporation
Leader Iron Works, Inc.
Link-Belt Company
Lovejoy Flexible Coupling Co.
Market Forge Company
Mason-Neilan Regulator Co.
Maxson Automatic Machinery Company
Meisel Press Manufacturing Company
Merrick Scale Mfg. Co.
Michigan Pipe Company
Monsanto Chemical Company
Morris Machine Works
Moyno Pump Div., Robbins & Myers, Inc.
Murray Manufacturing Co., D. J.
National Aluminate Corporation
National Casein Sales
Naylor Pipe Company
Nekoosa Foundry & Machine Works, Inc.
Nichols Engineering & Research Corp.
Noble & Wood Machine Co., The
Norma-Hoffmann Bearings Corporation
Northern Engineering Works
Norwood Engineering Company, The
Ohio Grease Company, The
Oliver United Filters, Inc.
Paper & Industrial Appliances, Inc.
Paper Makers Chemical Departmnt (Hercules Powder Co., Inc.)
Pennsylvania Salt Manufacturing Co.
Perkins & Son, Inc., B. F.
Pittsburgh Piping & Equipment Co.
Porter Company, Inc., H. K.
Pusey & Jones Corporation, The
Record Foundry & Machine Company
Reichhold Chemicals, Inc.
Robbins & Myers, Inc.
Rollway Bearing Company, Inc.
Roots-Connersville Blower Corp.
Ross Engineering Corporation, J. O.
Sandusky Foundry & Machine Co.
Sandy Hill Iron & Brass Works, The
Schutte & Koerting Company
Seybold Division, Harris-Seybold-Potter Co.
Shartle Bros. Machine Co.
Simonds Worden White Co.
Simpson Company, The Orville
Sinclair Company, The
Solvay Sales Corporation
Stainless Steel Division, Pittsburgh Piping & Equipment Co.
Stebbins Engineering & Manufacturing Company
Stein-Hall
Sullivan Machinery Company
Swenson Evaporator Company
Taylor Forge & Pipe Company
Toledo Scale Company
Trimbey Machine Works
Tube Turns, Inc.
Twin Disc Clutch Company
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Company
Waldron Corporation, John
Wallace & Tiernan Co., Inc.
Warren Steam Pump Company, Inc.
Westinghouse Electric Corporation
Whiting Corporation

Please mention the PAPER AND PULP MILL CATALOGUE when making inquiries.

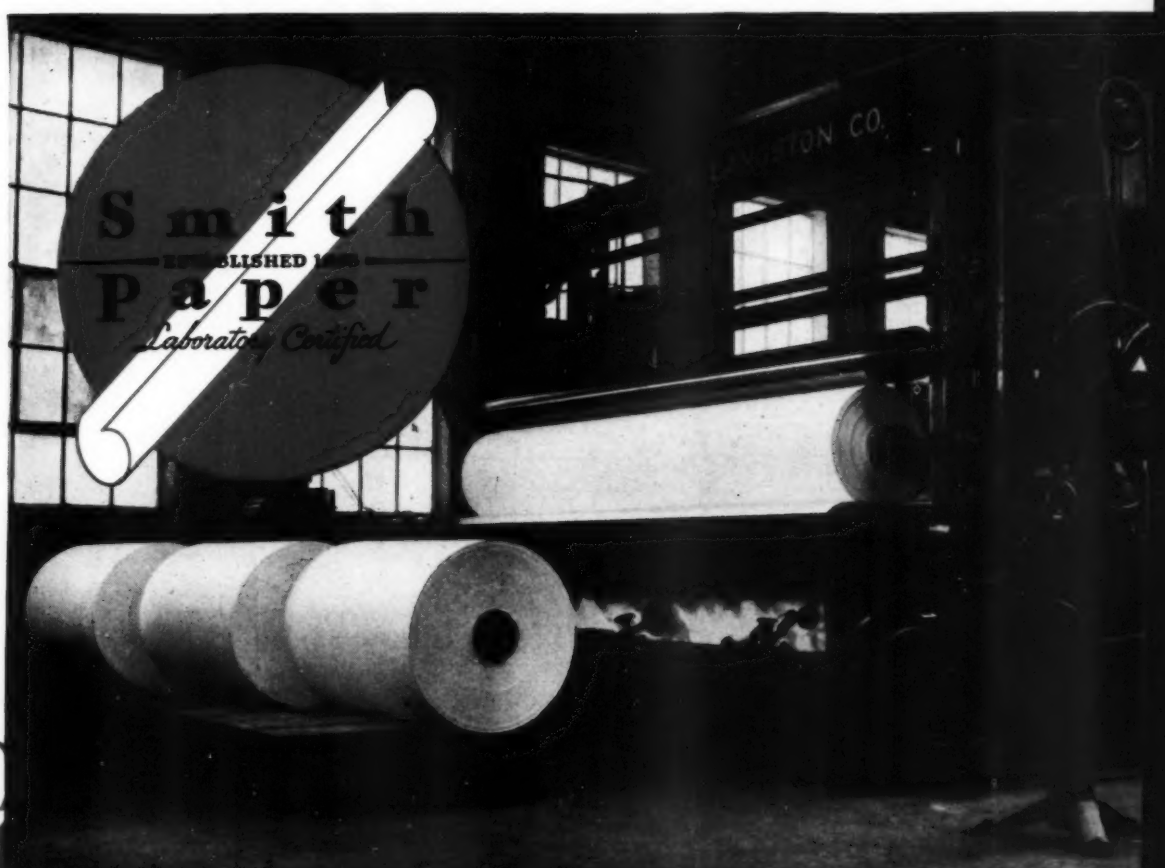
FRITZ PUBLICATIONS, Inc. 59 East Van Buren Street CHICAGO, ILLINOIS

Flint and steel have been associated in people's minds for a lot longer than any of us can remember. ***It has been a successful combination.***

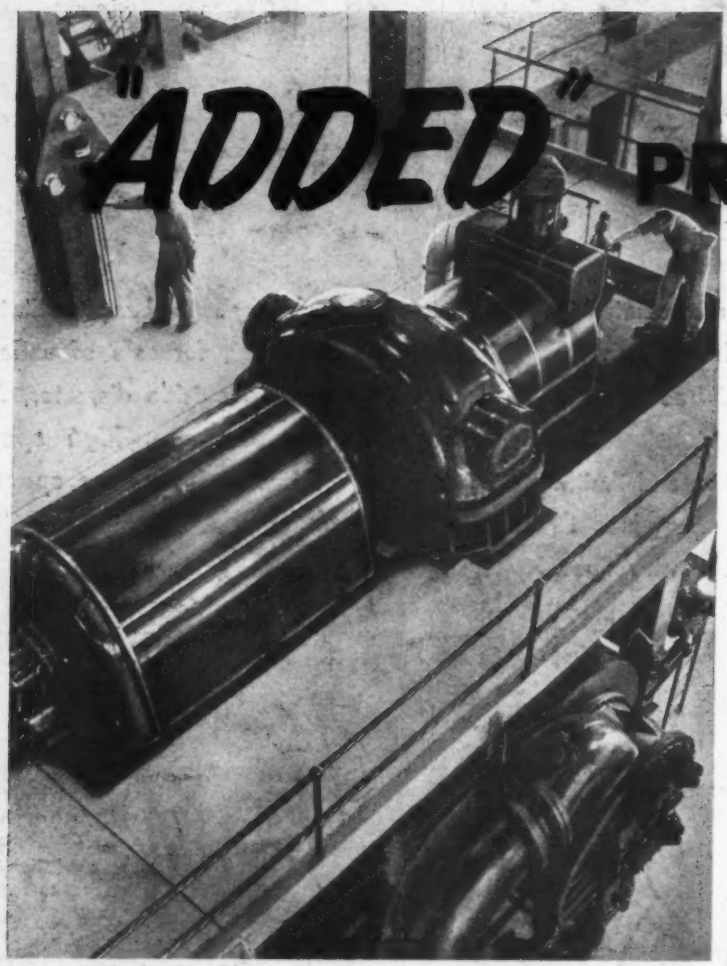
So also is the team of Langston and Smith. Langston Slitters help Smith Paper, Inc., to turn out cigarette tissue of the very finest quality. There is no guesswork in that plant, thanks to Smith's 109 years of manufacturing experience, and the use of such dependable and efficient machinery as the Langston Slitter. For a true, clean cut, for rolls of uniform density from core to outside diameter, ***for unbeatable performance, high speed operation and low maintenance, specify Langston.***

SAMUEL M. LANGSTON COMPANY

CAMDEN, NEW JERSEY



Langston SLITTERS AND ROLL WINDERS



"ADDED" PROTECTION FOR TURBINES

with lubricants specially designed to...

- ★ **Resist oxidation and rust—prevent sludging**
- ★ **Separate rapidly from air and water**
- ★ **Keep turbine lubricating systems clean**

TEXACO *Regal Oil* is an old and trusted name to turbine operators all over the world. *Texaco Regal Oil (R & O)* is the same famous oil, but *improved* by additives that give your turbines the added protection of high resistance to oxidation, rusting and foaming. In turbines of every type—large or small—*Texaco Regal Oils (R & O)* increase efficiency by keeping systems clean, bearing temperatures normal, governor action smooth and sensitive. Their use reduces maintenance costs and prolongs turbine life.

Texaco Regal Oils (R & O) are typical examples of petroleum products improved through The Texas Company's constant research. They are made in one of the world's largest refineries from carefully selected crudes processed by modern Texaco methods to provide efficient and economical turbine operation. Their production is 100% Texaco controlled from well to finished product to assure absolute uniformity.

Texaco Regal Oils (R & O) fully meet specifications of all leading turbine builders and the turbine oil specifications of the U. S. Navy.

For suggestions on the proper care of oil and maintenance of turbine systems, call on Texaco Lubrication Engineering Service, available through more than 2300 Texaco distributing plants in the 48 States. Get in touch with the nearest one, or write to:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

REG. T. M.

TEXACO Regal Oils (R&O)

FOR ALL TURBINES

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT—CBS

N

S

...

ust

air

ing

CBS